

SEPTEMBER 1919 ~ Nº 164

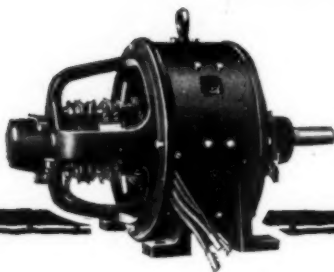
Monthly

A Reference for Buyers

HITCHCOCK'S  
**MACHINE  
TOOL LIST**

Distributed Free to Machine Tool  
Users Everywhere in the United States and to  
Dealers in American Machinery Abroad

Published by  
**A. H. HITCHCOCK**  
1220-1235 Caxton Building  
Chicago



## A Motor of Practical Ideas

Every Type T Reliance Motor represents the combined ideas of 35 prominent electrical engineers in the iron and steel mills and machine shops—men who have had unusual opportunities to learn the need for quality and strength in every motor detail.

No motor could be more thoroughly the result of recommendations and criticisms from men in the field whose needs it is intended to meet.

**Bulletin 2014 tells why**

**Reliance Electric & Engineering Co.**

1050 Ivanhoe Road, Cleveland, O.

**BRANCHES:**

New York, Boston, Philadelphia, Pittsburgh, Chicago

*Type* **T** Heavy Duty  
**RELIANCE MOTORS**  
*Direct Current*

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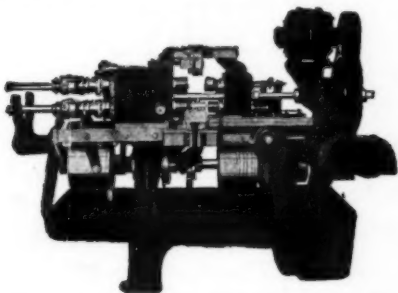
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# STILL GROWING

Every year the list of  
*satisfied* users of  
**Acme Automatics**  
grows larger

The real reason behind that satisfaction is the actual production that these machines continually turn out.

Why not more of *your* work, *automatically*?



*Capacities up to 3 $\frac{3}{4}$ " diameter*

## THE NATIONAL ACME COMPANY

NEW ENGLAND PLANT  
WINDSOR, VT.

Cleveland, Ohio

CANADIAN SCREW PLANT  
MONTREAL, P. Q.

### *Branch Offices:*

NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO  
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

*Makers of Gridley Single and Multiple-Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio*



*When you need*

# **GOOD BUSHINGS**

*in a hurry*

Just reach for the Stock List of Bunting Finished Stock Bushings (which should be hanging by your desk) and send a wire.

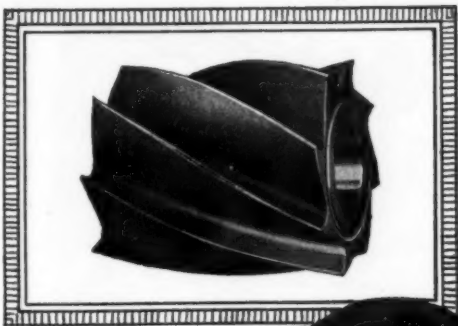
Shipment is made that same day.

Even in small lots you get a big price advantage because we make up these bushings in big runs.

Of course you get the famous Bunting Quality.

*Ask for Stock List W*

**The Bunting Brass & Bronze Co.**  
755 Spencer Street, Toledo, Ohio



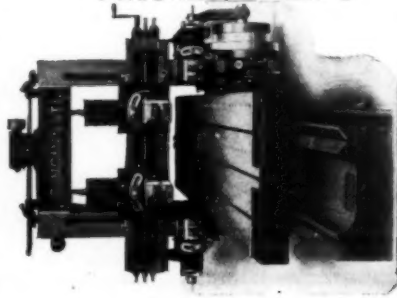
Attention

Prompt  
Shipment  
on

Brown & Sharpe  
Milling Cutters  
Providence, R. I., U. S. A.

# Cincinnati Patent Tu-Speed Planers and Rapid Production Boring Mills

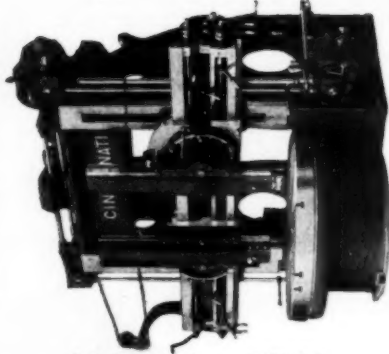
## Tu-Speed Planers 22" to 48" Inclusive



What's the use of losing time with one speed for all work, while you can just as well have two speeds instantly available? All Cincinnati belt-driven planers from 22" to 48" are made that way. Better get acquainted with them.

## Boring Mills

Made in the spur gear and bevel gear type. For machining work of large diameters they are unexcelled. They are another good bet. You should have specifications.



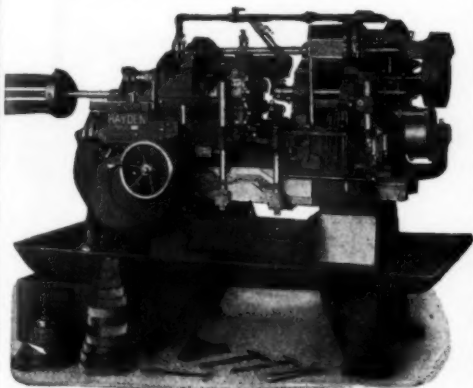
*Information for the asking*

THE CINCINNATI PLANNER CO.,

Cincinnati, Ohio, U. S. A.

# A 5-Spindle

**Money Maker and Money Saver**



## **The Cincinnati Automatic Screw Machine**

**It makes money because it increases production.**

**It saves money because it reduces costs.**

The proof lies in the time required per piece, which ranges from  $2\frac{1}{2}$  to 36 seconds, according to the character of the work.

Its 48 Superior Features, fully explained in the Catalog, place it in the front rank as a large producer of accurate work of a wide range.

*Write for the Catalog, and send us sketch or samples of your work for production estimate*

**Cincinnati Automatic Machine Co.**

**Oakley, Cincinnati, Ohio**

Every shop owner or superintendent  
should have a copy of "G-K Betterments"



G-K 14", 16" and 18"  
Heavy Quick Change

**"G-K Betterments"** is the name of a book. It describes the betterments in the construction of G-K Engine Lathes, from 14" to 30" swing. And they are some betterments, too.

**Every lathe user** should have a copy, for it posts him entertainingly on mechanical improvements which he wants to know about, and which he cannot know in any other way unless he is one of the fortunate users of G-K Lathes.

*We have a copy for you; what's your address?  
And what do you need in lathes from 16" to 30"?*

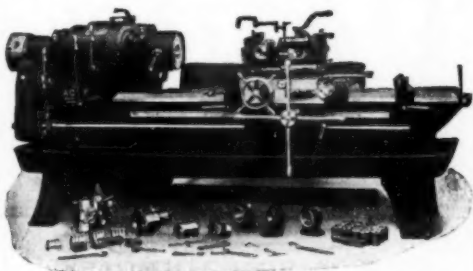
**The Greaves-Klusman Tool Co.**  
Cincinnati, Ohio, U. S. A.

**CINCINNATI-ACME**

**3¼x36-Inch  
Combination**

**Flat Turret Lathe**     **The Most Rigid  
Turret Lathe Made**

**3¼"x36" Bar Capacity    16" Chucking Capacity**



**Showing Equipment for Bar Work**

**YOU ARE FORTUNATE** if you have quantities of detail parts which can be machined on the Cincinnati Acme Flat Turret, because it offers you just the means of increasing output and decreasing costs which you have been looking for.

**BETTER TAKE IT UP** with us and find out whether the Cincinnati Acme really is adapted to your work, for if it is you will be glad you did.

*Why not write today, so you won't forget?  
Don't mind troubling us—we like it*

**The Acme Machine Tool Co.**  
**Cincinnati, Ohio, U. S. A.**

Pat. Jan. 30, 1917



## Just What I Want

Automatic Extension Reel for Electric Lamps.  
Light just where wanted.  
25 ft. of cord.  
Automatically locks and rewinds.  
Approved by underwriters.

The Cincinnati Specialty Mfg. Co., Inc.  
1913-21 Powers St., Cincinnati, Ohio  
*Branch Offices:*  
205 Abbott Bldg., Philadelphia, Pa.; 39-41 Cortlandt St., New York

## Taper Keyseating

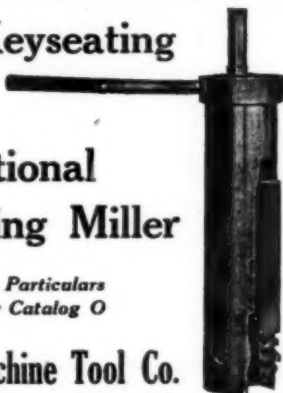
with

## The National Keyseating Miller

*For Full Particulars  
Write for Catalog O*

### National Machine Tool Co.

2266 Spring Grove Ave., Cincinnati, O.



# Extremely Simple—It Wins

The "Catlin" Keyseater Does Faster Work

## Please Note:

It has less than half the parts of any other make—hence the great simplicity, strength, and big production.



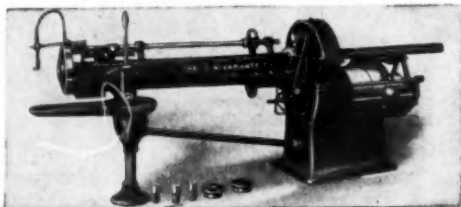
The remarkable efficiency of the "Catlin" has earned for it the title "Most Popular Key-Seater in the World." It is accurate to even better than one-thousandth of an inch.

As for speed, here's an example:—In ordinary routine work, without making any effort at record breaking, the "Catlin" cut a key-seat 10" long, 1½" wide, and 7-16" deep, in three minutes, through a cast iron hub. In the hub of a cast steel wheel it cut a key-seat 6" long, 1" wide and 7-16" deep, in three minutes. Any number of duplicate key-seats can be made without stopping the machine.

*It is saving time and money in some of the biggest plants in the country—why not use it on your work?*

**Chattanooga Machinery Company**  
**Chattanooga, Tenn.**

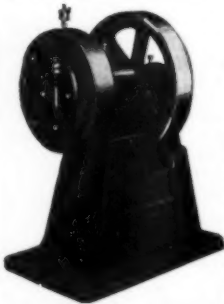
**This is only one of the  
11 TYPES - 5 SIZES  
Ask for a complete catalog**



**J.N. LAPOINTE CO.**  
NEW LONDON, CONN.

Makers of Broaching Machines and Broaches.

**For continuous, unrelenting hard work  
in rapid reduction of stock**



## **The Etna Rotary Swager**

Makes reductions in metal by a hammer action of immense force and extreme rapidity, striking about 3,000 blows a minute. Work can be passed through it at the rate of from 10 to 20 feet per minute, depending upon size and material. It often multiplies production 500% to 1,000% over power hammers.

Made in regular sizes to swage  $\frac{1}{4}$  to  $4\frac{1}{2}$ " diameter. Write for large, illustrated Catalog showing interesting production figures.

**The Etna Manufacturing Co., TOLEDO,  
OHIO**

## Modern Methods for Quick Work



### **A DAVIS KEYSEATER**

Motor driven,  
will save you  
valuable space  
as well as in-  
crease your pro-  
duction. It is  
an investment  
you can't afford  
to overlook.

*Write for Circular*

**DAVIS MACHINE TOOL CO., Inc.**  
**ROCHESTER, N. Y., U. S. A.**

# The Lee

A Small Planer for the Quick, Accurate,  
Economical Planing of Small Work



**16x16x42' and 16x16x54'**

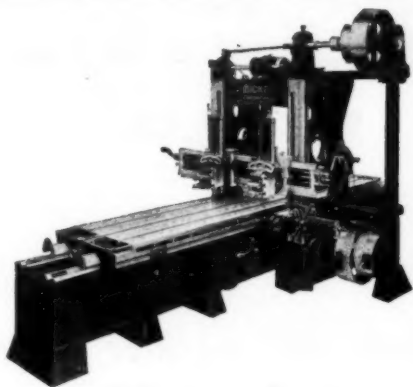
This is a stiff, accurate, powerfully-gearred small machine of big planer quality. It assures greater convenience and facility in handling small work, with a considerable saving in investment, upkeep and operation—points well worth your careful consideration.

Highly regarded in the past as the Walter Bros. Patent Planer, it is now made by a concern which has the financial, engineering and mechanical resources to insure the highest quality throughout.

*If it fits your work it will save you money*

## The Frank H. Lee Co.

MACHINERY DIVISION  
Danbury, Conn., U. S. A.



**36"x36"x12'**

## **Bickett Metal Planer**

**T**HIS PLANER is built in the following table lengths: 8, 10, 12, 14 and 16 feet. The Planer is equipped with one Head on the cross rail, equalized Table Lubrication, Aluminum Driving Pulley and necessary Wrenches. Second Head on rail and Right and Left-hand Side Heads quoted on request.

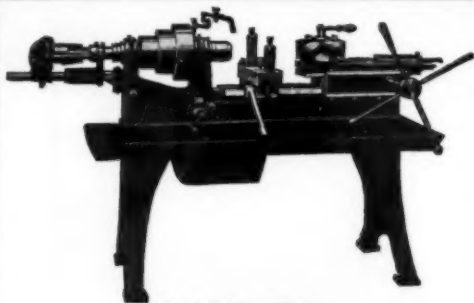
The arrangement for the belted motor drive as illustrated is so arranged that motor can be attached either by flexible coupling or by set of gearing. Flexible coupling and gearing are furnished at an extra cost.

You will note in our countershaft mounted on top of the housing of our planer, in addition to its very rigid construction with a separate pedestal extending to the floor, it has means for adjustment to tighten the belts as they stretch under strain, also means for adjusting countershaft in proper mesh with the motor gear. This feature we believe to be novel and substantially important. The shaft bearings are of ring oiling design.

The style motor and speed of same is left optional to the purchaser of the planer, as we furnish no electrical equipment, except when ordered, for which we can quote upon request.

**The Bickett Machine & Mfg. Co.**

**Cincinnati, Ohio, U. S. A.**



**MODEL "D"**

## **Turret Lathes and Screw Machines**

**Now Ready for Delivery**

**Designed for Rapid Manufacturing of  
Parts Requiring Several Operations**

### **MADE IN FOUR SIZES:**

- No. 2 {  $1\frac{1}{8}$ " Wire Feed Capacity, Plain Head  
          {  $1\frac{1}{8}$ " Hole Through Spindle.
- No. 3 {  $1\frac{1}{4}$ " Wire Feed Capacity, Plain Head  
          {  $1\frac{1}{4}$ " Hole Through Spindle.
- No. 4 {  $1\frac{1}{2}$ " Wire Feed Capacity, Geared Head  
          {  $2\frac{1}{8}$ " Hole Through Spindle.
- No. 5 {  $1\frac{3}{4}$ " Wire Feed Capacity, Geared Head  
          {  $2\frac{3}{8}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.  
Mechanically Perfect and Fully Guaranteed.**

**Manufactured By**

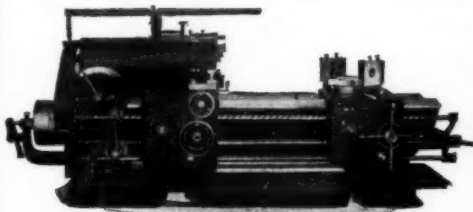
**Smurr & Kamen Company**

**328-330 N. Albany Ave., Chicago, Ill.**

# STEINLE TURRET MACHINE CO.

## MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



**Steinle 24" Full Swing Side Carriage Turret Lathe**

Machine is regularly furnished belt driven or arranged for motor drive.

Actual swing over ways.....	24"
Swing over side carriage.....	21"
Diameter of hole through spindle.....	4" or 6 1/4"
Traverse of side carriage and of turret carriage.....	56"

Both carriages have independent quick change feed and independent power traverse all controlled from carriage aprons.

Side carriage can be run past the chuck and is equipped with cross slide having power cross feed and with turret tool block having four tool holders.

There are thirty reversible spindle speeds available. One belt or one motor furnishes power for all functions of the machine.

Turret is massive and designed particularly with a view to rigid support of tool equipment.

Send us drawings of gas engine fly wheels, cylinders where cast singly, pistons, and piston rings. Let us give you production estimates and the cost of tool equipment for these and other pieces and also let us tell you the time required to change the tool settings for the different pieces.

Numerous repeat orders received from many of the principal manufacturers of tractors, trucks, aviation motors, marine gas engines, and stationary engines demonstrate the satisfactory results obtained from the use of our machines.

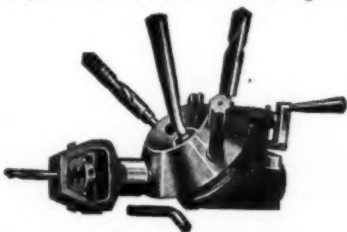
## Usable on Screw Machine Work

The Newman Five-Hole Tail Stock Turret transforms any lathe into a turret lathe. Increases your capacity greatly and is invaluable in emergencies. Built to stand the stress of long runs.

Will fit  
any lathe

Attach in  
15 seconds

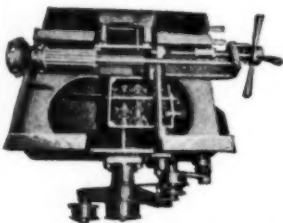
Sent on  
10 days'  
trial



*Write us today; state outside diameter of tailstock spindle*

**NEWMAN MANUFACTURING CO., Cincinnati, O.**

## Modernize Your J. & L. Lathes With Our NEW Gear Feed



Your friction feed troubles on your "old war horses" are over when you equip them with our Special Gear Feed.

Easily installed--or we will install at cost and repair or rebuild your J. & L. Turrets.

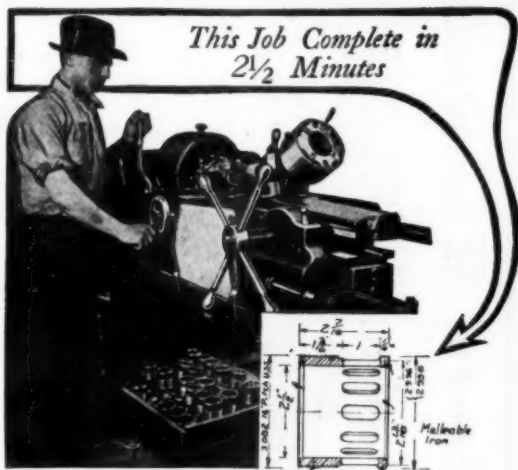
It's a reliable feed that greatly aids production.

*Just install one--you'll soon order more*

**A. V. Wiggins & Co., Dept. H**  
384 W. Fayette St., Syracuse, N. Y.

# THE TILTED TURRET

A CLEAR TRACK — THE STOCK



## The TILTED TURRET MACHINES

are **accurate** and **productive**.  
Fifteen years' of thoroughly  
tested service. A size for  
every class of manufacturing.

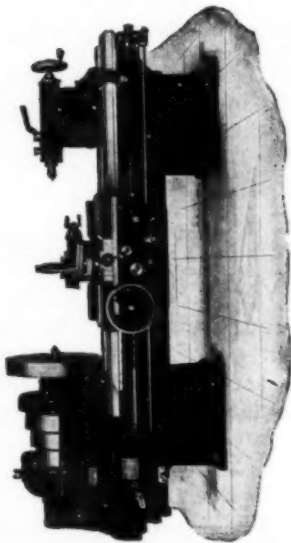
Ask the User

Catalog "H"—Its Free

WOOD TURRET MACHINE CO.

BRAZIL INDIANA U.S.A.

# SIDNEY LATHES—For All Requirements



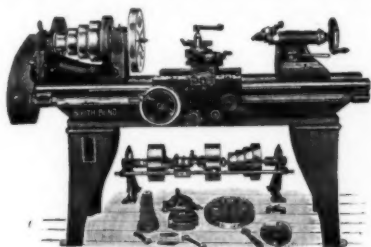
The Sidney Line of medium and heavy duty lathes includes a lathe for every class of work, regardless of the size or type of shop you are running.

Lathes of medium duty in 14, 16, 18 and 20-inch swings, and of heavy duty in 15, 17, 19, 25, 27, 30 and 36-inch swings.

*Send for Bulletin No. 45.*

**THE SIDNEY MACHINE TOOL CO., Sidney, Ohio**

## South Bend Lathe



**Made with straight or gap bed.**

**Price includes equipment as shown in illustration**

## For the Machine and Repair Shops

13' Lathe.....	\$ 325	18' Lathe.....	\$ 700
15' Lathe.....	420	21' Lathe.....	900
16' Lathe.....	500	24' Lathe.....	1250

**With Beds from 4 ft. to 16 ft. in length.**

**South Bend Lathes have been on the market 13 years. Over 20,000 in use.**

**New York Office: - 2½ Murray Street**  
**Boston Office: - 65 Oliver Street**

**Free catalogue mailed on request**

## South Bend Lathe Works

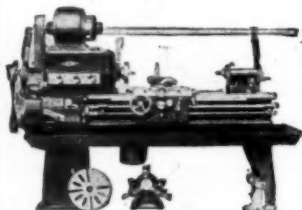
**Established 1906**

**South Bend, Ind.**

430 E. Madison

## **"Filsmith" High Power Lathe**

**A Sturdy Tool for Strenuous Service**



**14" Swing  
Q. C. Gear Box  
And 12-Speed  
Ball Bearing  
Geared Head**

Has many new and practical features. Has exceptional strength for its weight and great power for its rated swing. Made throughout of very best materials. Description is interesting and price is O. K.—write today.

**PHILIP SMITH MFG. CO., SIDNEY, O.**

## **Crawford Lathes**



**Also Made  
with  
Geared Head**

**Standard Type D  
15" Tool Room Lathe**

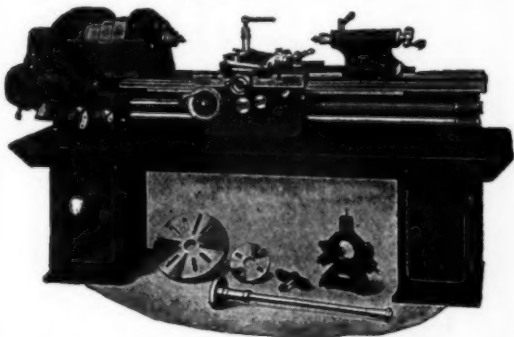
**Belt or  
Motor  
Drive**

Made for a discriminating trade and to give satisfaction under the most exacting conditions.

**Crawford Machine Tool Co., Inc.  
21 Park Row, New York**

# The Willard MATTMAN BRATTEN Tool Room Lathe

Quick Change, Double Back Geared



*An exceptional lathe of the highest practical quality, because it is of exceptional design and construction. We can only refer briefly in this space to a few of its many features.*

*The new headstock, with castings brought to center line in both front and rear, insures great stiffness. The spindle is chrome nickel steel forged and bored from the solid, ground to size and interchangeable, with phosphor bronze bearings.*

*The tailstock is extremely rigid, clamped to the bed by a single bolt. The spindle is of annealed tool steel.*

*The compound rest has a top slide composed of a steel casting, and no breakage is possible. The bottom slide is graduated for any angle up to 90 degrees.*

*The quick change gear box is a unit mechanism bolted to the bed. All the gears and clutches are steel, made from the bar or forging—all so strong that feed changes may be made while running under cut.*

## **Willard Lathes Are Made In All Styles**

*Write for description of our Tool Room or Engine Lathes, either All Geared Head or Cone Type.*

## **The Willard Machine Tool Co., Inc.**

F Street, Box 784

CINCINNATI, O., U. S. A.

# Monarch Lathes

give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes.** Built in all styles and with any attachments desired.

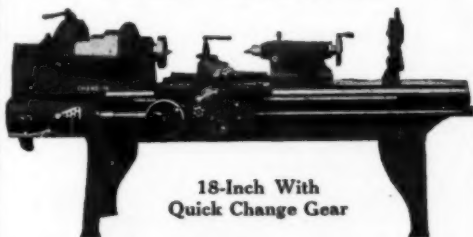
**Sizes 10 to 30-inch Swing**

*Sold by a leading Machinery Dealer  
in every machinery center.*



## The Monarch Machine Tool Co., Sidney, Ohio

## What is the Super-Quality In the "CHARD"?



**18-Inch With  
Quick Change Gear**

It is simply an advanced design and construction, made possible by an intensive study of lathe construction for over 35 years. The specifications tell the story in detail, from the specially constructed massive headstock to the two-speed double friction countershaft with Hyatt roller bearings in friction pulleys and boxes.

If you need a lathe that will handle heavy work with the greatest ease, speed, accuracy and economy, you will find it well worth your while to send for the specifications of the "Chard Super-Quality" and look them over.

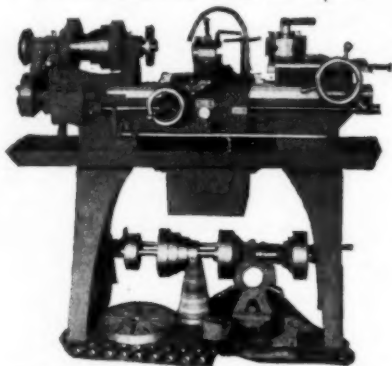
*Made in Sizes 16", 18", 20", 24" and 28"  
Let us know in what sizes you are interested*

## **Chard Lathe Company** **Newcastle, Ind.**

### **DOMESTIC DISTRIBUTORS**

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.  
VONNEGUT MACHINERY CO., Indianapolis, Ind.  
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.  
OGDEN R. ADAMS, Rochester, N. Y.  
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.  
J. S. MILLER MACHINERY CO., Pittsburgh, Pa.  
MONARCH MACHINERY CO., Philadelphia, Pa.  
DALE-BREWSTER CO., Chicago and New York.  
THE BIGGS-WATTERSON CO., Dayton, Ohio.

**Tool Room Lathes**  
**Worcester 12 and 14 Inch**  
**Manufacturing Lathes**



**Worcester 12"x4" Manufacturing Lathe**

The picture shows full equipment except tail-stock, which is usually furnished. Can be furnished with cone head as shown, or with geared head for motor drive or single pulley drive.

We have separate handsomely illustrated folders, entitled "Tool Room and Manufacturing Lathes" "Geared Head Lathes" and "Cone Drive Lathes"—12 and 14 inch. Every "Worcester" is complete in itself and embodies the highest type of lathe construction.

*The lathes for practical service. Folders?*

**Worcester Lathe Company**  
**68 Prescott St., Worcester, Mass.**

**"THE SMALL LATHE FOR THE BIG JOB"**

# "DALTON SIX"

**METAL WORKING  
LATHE**  
*Actual Swing 7 1/4 Inches*  
**MODEL TYPE "B-4"**  
30 OR 36 INCH LENGTH OF BED



Standard Machine  
Mounted with Standard  
Type High Legs



Standard Machine  
Mounted with Cabinet  
Type High Legs



Lathe Attachment Fits  
all of our Machines



Standard Bench Type



Standard Bench Machine  
Mounted with  
Wheel and Lever  
Type Tool Rest



Standard Machine Showing  
Draw in Attachment with  
Cabinet Type High Legs

Standard Machine  
with Four Draw  
in Attachment



Standard Machine, High  
Legs, with Wheel and  
Lever Type Tool Rest



Manual Driven Machine  
with Cabinet High Leg,  
Nosing (Removal) Attachment



MANUFACTURED BY  
**DALTON MANUFACTURING CORPORATION**  
NEW YORK, U.S.A. CABLE ADDRESS "ALEDAL" NEW YORK

**COMPLETE BULLETINS SENT ON REQUEST**

# Universal Index Center

Schipper 10"



It is both light and strong, and handles a wide range of work. Swings to limit of  $10\frac{1}{2}^\circ$ . Index plates divide from 2 to 400 inclusive. Graduated head can be set from angle of 10 degrees below horizontal to 10 degrees beyond perpendicular. Rotates on base to any number of degrees desired.

*Glad to mail you the complete description*

**Schipper Machine & Tool Co.**  
Aurora, Indiana

# Save Money as Others Have

Dickow's 10" Universal Index Centers



**PROMPT  
DELIVERY**



Sent on 15-day trial.  
Increase your production  
by the use of our  
very accurate and most  
simple Index Centers.

*Patents Pending*

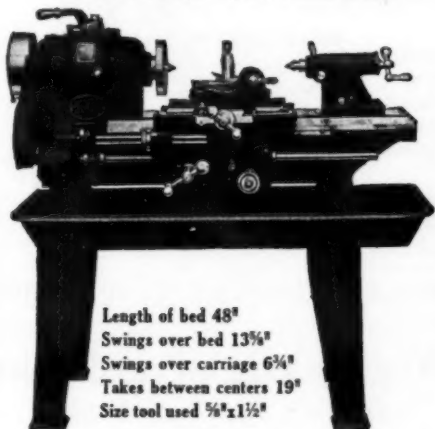
**For Accuracy Get Dickow's**

*Sold by dealers. Write us today.*

**Fred. C. Dickow, 1858 W. Lake St., Chicago, Ill.**

# An Economical Short Lathe

With a Big Capacity for Small Work



Length of bed 48"  
Swings over bed 13½"  
Swings over carriage 6¾"  
Takes between centers 19"  
Size tool used ⅝"x1½"

## The Adams Short Cut Lathe

Is cheaper originally than is a larger lathe.

It occupies small floor space; viz., 4' 6"x2' 4".

It costs less to maintain and operate.

It is so light running and so easy to manipulate, that, within its capacity, it handles work more rapidly than does a larger machine.

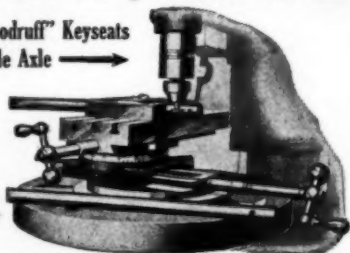
*May we send you complete specifications  
of this saver of space, time, and money?*

**O. R. Adams Manufacturing Co., Inc.**  
**Rochester, N. Y.**

## Mills On Any Drill Press

Cutting "Woodruff" Keyseats  
In Automobile Axle →

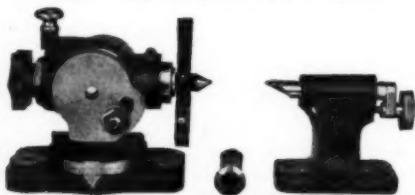
For the  
Garage  
Dismaker  
Repair Shop  
Patternmaker



The Davis Milling Attachment and Compound Table can be used on any drill press from 14 to 42-in. swing. It is equally valuable in big and small shops, as it does most of the lighter jobs as well as a large, expensive machine; cuts all kinds of keyseats perfectly. Our cylinder reamers for reboring the Ford car, and our efficient air compressor are also attractively priced. Send for circulars.

**Hinckley Machine Works, HINCKLEY, ILL.**

## Why Use a High-Priced Miller On Plain, Easy-To-Do Work?



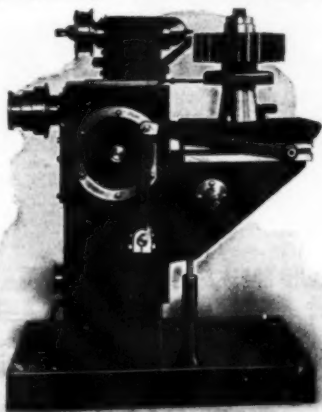
A low-priced Hand Miller, equipped with our Semi-Universal Dividing Head, is adequate for all kinds of straight milling, leaving your expensive Universal Miller open for your difficult work.

*A real economy at small cost—write us*

**Whiting & Comstock,** 32 Union Place,  
Hartford, Conn.  
Export Department, 77 Broad St., New York City

# Rounds 24 Teeth a Minute

**Cross Gear Tooth Rounding Machine  
Makes Every Tooth a Perfect Half Circle**



We guarantee the above production. Every tooth must come a perfect half round from tip to root, and of any pitch from 20 to 6/8.

The "Cross" handles gears of any number of teeth from 8 to 250, including all prime numbers.

It successfully rounds tank and tractor gears on a production basis. The speed and accuracy of the "Cross" insures rock-bottom manufacturing costs at all times.

*Self-interest dictates that you look into above facts*

## **Cross Gear & Engine Company**

**Detroit, Michigan**

Patented here and abroad; sold ONLY by us

## Full Universal Dividing Head



10 Inch

**"WILLARD"**

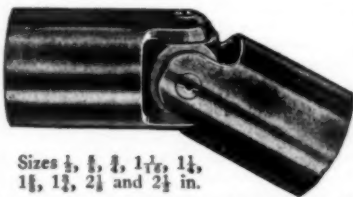
Right or left hand. Its exceedingly liberal proportions enable it to take care of the heaviest cuts on any plain milling machine. All parts interchangeable. Swivel head rotates from ten degrees below horizontal to ten degrees beyond vertical. Tailstock center can be set and securely clamped at any angle. An efficient locking device relieves the worm wheel and index pin of cutting strain. Wear between worm and wheel is taken up without disturbing their axial position. Driving mechanism for spiral cutting can be applied. One large index plate takes place of usual three, giving greater accuracy and more divisions.

*Write for the complete description*

**THE WILLARD PRESS & TOOL CO., Cincinnati, Ohio**

## "Giant" Universal Joints

**Thoroughly Time Tested on Heavy Service**



**Efficient to an  
angle of 45  
Degrees**

**Vanderbeek  
Universal  
Ball Joints  
for higher  
angle drives**

Sizes  $\frac{1}{2}$ ,  $\frac{3}{4}$ ,  $1$ ,  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ ,  
 $1\frac{3}{4}$ ,  $2$  and  $2\frac{1}{2}$  in.

The "Giant" passed the experimental stages years ago; there are thousands in satisfactory use. It is self-oiling and dirt-proof, and so dependable that you can connect it up and forget it. Let us solve your angular drive problems to your satisfaction.

**Ainslie Machine & Tool Works**

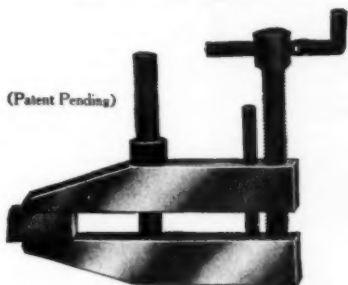
Successors to Vanderbeek Tool Works

**HARTFORD, CONN.**

# Hill's Parallel Clamp

## For Tool Makers

(Patent Pending)



In these clamps one side of the clamp is prevented from swinging around on the screw, as in the ordinary clamp, by the pin in front of the rear screw.

There is no screw head at the bottom to be in the way.

The clamp can be operated with one hand, leaving the other hand free to handle work.

Work can be held more securely, and with less strain on the screws than with the old style clamp, as the pin tends to give the jaws a parallel contact on the work. No wrench is required.

Made in 4 sizes, hardened and accurately machined.

### Opening of Jaws

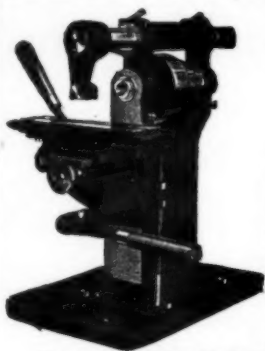
No. 1,  $1\frac{1}{4}$ "  
 " 2,  $1\frac{1}{2}$ "  
 " 3, 2"  
 " 4, 3"

### Length of Jaws

$2\frac{1}{2}$ "  
 3"  
 $3\frac{1}{4}$ "  
 4"

Manufactured By

**M. B. Hill Manufacturing Company**  
 Worcester, Mass.



## Burke's No. 3 Bench Millers

### Are Seasoned Tools

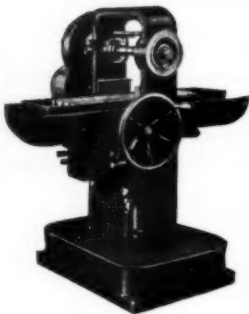
Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.; traverse feed,  $3\frac{1}{2}$  in.; vertical motion of knee, 8 $\frac{1}{2}$  in.; table surface,  $3\frac{1}{2}$ x12 inch.

*Write for Catalog, which also shows larger and smaller sizes.*

**The Burke Machine Tool Co.**  
Conneaut, Ohio

## For Manufacturing—



## Briggs High Duty Milling Machine

does better work at less cost because it is better adapted to heavy and rapid cuts in manufacturing. It has rigidity, power and convenience.

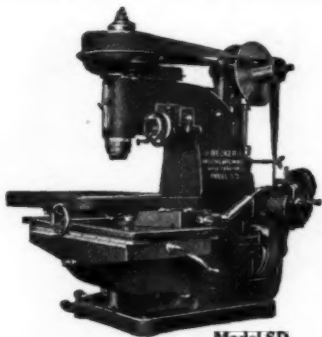
The direct geared drive close to the end of the arbor, and the heavy table with its powerful screw feed are among the features which enable it to cut hard steel to the full power of the double belt.

*Write us if interested in low manufacturing costs*

**GOOLEY & EDLUND, Inc., Cortland, N. Y.**

# BECKER

The Machine that Gives the Smooth Finish



Model SD

## Superiority of Ranges

is a salient feature that has earned a high place in the Machine Tool Industry for

## Becker Belt Driven Millers

The Internal Belt Drive provides an elastic feed to the spindle, eliminating chatter and prolonging the life of the cutter used.

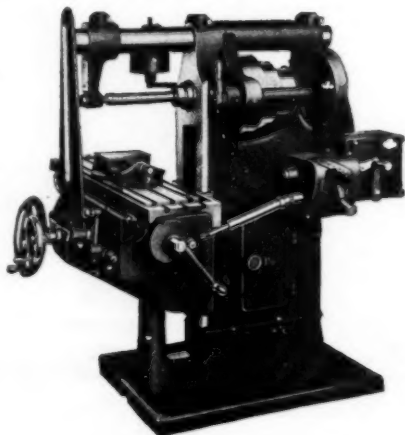
As a production tool The Becker is without an equal.

*Circular S701 tells why. Write for it today*

## Becker Milling Machine Co.

Hyde Park, Boston, Mass.

No. 1½ Plain Back Geared  
**American Milling Machine**



This strong, rigid, accurate miller is a thoroughly dependable manufacturing tool of the first class. It is simple in design, convenient of operation, and quick and reliable in its results.

It has plenty of metal to take care of all strains, the bearings are wide, all alignments are accurate, adjustments are simple, and the oiling system provides ample lubrication.

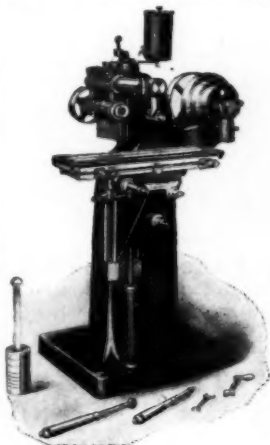
Equipped, if desired, with a strong, accurate Vertical Spindle Milling Attachment bolted to face of column.

*Write for specifications of this splendid machine*

**The American Milling Machine Co.**

Cincinnati, Ohio, U. S. A.

**No. 1 U. S. Improved**  
**Hand and Weight Feed Milling Machine**



There are many milling operations which our Hand Miller will do in much less time and at far less cost than can be done on large, costly milling machines.

This applies particularly to the milling of small parts.

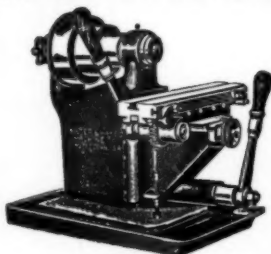
The U. S. No. 1 is a hand miller of quick adaptability and wide range, with more power than any similar machine of equal size anywhere, making it an exceptionally useful tool in any shop.

The vertical and horizontal feeds are independent and permit the work being held close to table, so that it may be used as a profiler. The vertical lever feed being independent from the table and the head accurately counterbalanced, light milling work can be done on long or heavy pieces without danger of breaking cutters. The table is operated by hand lever, also crank feed with rack and pinion. A weight attachment permits head and table to be fed automatically. There are adjustable stops for both table and head. All in all, the U. S. Hand Miller is a machine which you may find it quite profitable to thoroughly investigate.

*May we mail you the full particulars?*

**The United States Machine Tool Co.**  
Cincinnati, Ohio, U. S. A.

## Just The Machine

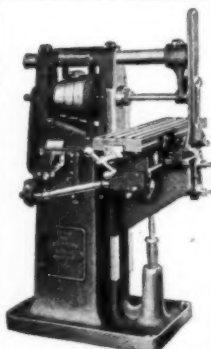


for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

*Send for descriptive circular*

**The Carter & Hakes Machine Co.**  
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.  
WESTERN AGENTS—Marshall & Huschart Machinery Co.,  
Chicago, St. Louis, Indianapolis.



## A Better Miller

### Our 2-B Plain

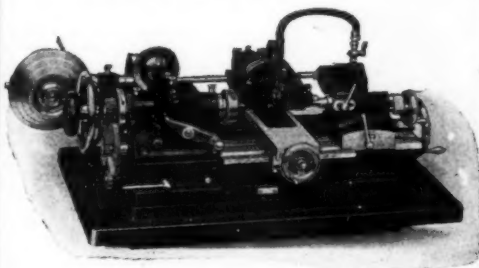
The 12 feeds are obtained thru quick change gear box. Gears in feed box are of special alloy steel; drive is by a roller chain from spindle. Spindle is of forged crucible steel.

Construction of arbor support is original with us. It has a self-aligning ball bearing, which will stand any cut the machine will pull for a long time without perceptible wear. Our circular gives full details of this and other features.

*We invite your inquiry*

**THE DAVENPORT MFG. CO., Meadville, Pa.**

## Produces a Complete Thread In One Revolution of the Work



### The Waltham Thread Milling Machine

performs the above quick work with certain threads for which a multiple cutter may be used. But whether employed as a manufacturing or universal machine, it does accurate and dependable threading at rock-bottom cost. We call your attention to the following features of design:—

A Constant Speed Shaft at the rear of the machine, controlling the driving mechanism for the cutter, work and pump. This makes the machine ideal for individual motor drive.

Interchangeable Cone Pulleys connecting the workhead to the driving mechanism, by which sixteen different feeds for the work may be obtained.

A Compensating Bar, by which the lead of the thread can be varied to make allowance for changing in hardening. Valuable in thread gauge work.

A Taper Cutting Attachment, similar to those in common use on engine lathes.

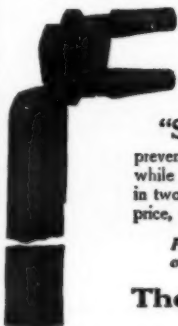
An index of 12 divisions on the work spindle, by which multiple threads can be readily obtained.

*Glad to submit the full specifications and to submit a production estimate from samples of your work*

**Waltham Machine Works**  
**Cutter & High Sts.,      Waltham, Mass.**

# Prevent Injury to Your Men

By Using "Safety First" Belt Sticks



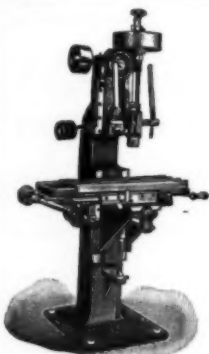
It is now the "stick" in time that saves nine—accidents. Made with three rollers, two of them tapered, there's no chance whatever for the hook to get caught.

## "Safety First" Belt Sticks

prevent your men—or women—getting hurt while putting belts on moving pulleys. Made in two sizes, 1 to 4 in. and 4 to 6 in., at one price, only \$1.25 each or \$12 a dozen.

*Prevent that bad accident by ordering a few "Sticks" today*

**The Ready Tool Co.**  
Bridgeport, Conn.



## An Improved Vertical Miller With Slotting Attachment

Size of table.....28"x9¾"  
Lengthways auto feed 21"  
Cross motion.....9"  
Vertical adjustment.....15"

The Clough No. 2 combines expedience with unerring exactness, being accurately adjustable to 1-1000's of an inch. The spindle has taper bearing and can be driven at six different speeds.

It is unexcelled for blanking dies, die sinking, metal patterns and light machine work.

*This may be just what you are looking for; write for folder.*

**R. M. CLOUGH, Meriden, Conn.**

# The Time and Money Saving **GENESEE** **Adjustable Hollow Mill**

**Replaces Hundreds of  
Much Stronger Than Solid Tools**



Designed and built to take the place of hundreds of solid tools, to increase production and to reduce costs.

A Genesee Hollow Mill can be adjusted to 1000th of an inch in a few minutes. A cutting speed of 12" to 15" a minute can be successfully used on steel—can you equal that with your present equipment?

Never clogs up with chips, and does not change in size—it is always Johnny-on-the-Job.

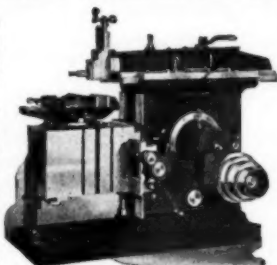
*We invite you to put your jobs up to  
our engineers for rapid production*

**Genesee Manufacturing Co., Inc.**  
**Rochester, N. Y.**

**Manufacturers of Adjustable Hollow Mills, Facing Tools, and  
Inserted Tooth Face and Side Milling Cutters**

## HIGH GRADE, HEAVY DUTY COLUMBIA SHAPERS

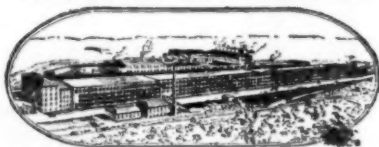
Note the extra large base, extending well beyond table. Pan construction, strongly ribbed, flanged around under side. Provides a firm, rigid foundation for the machines—an important feature. For full details of 16", 20", 24" or 28", address



**The Columbia Machine Tool Company**  
Hamilton, Ohio

## MORSE SILENT CHAIN DRIVES

**For All Transmission Purposes**



**Where the Morse Silent Chain Drives are made**

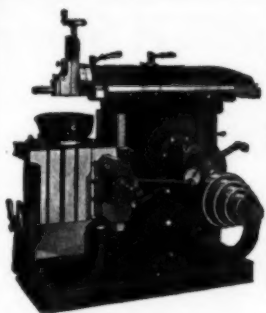
They are transmitting some 3,000,000 h. p. in the U. S. alone, from the smallest to 5,000 h. p. Glad to discuss their application to your purposes. Will you say the word?



**Morse Chain Co.**  
Ithaca, N. Y.

*Morse Engineering Service*  
*Assistance Free*





# Steptoe Shapers *and* Millers

are the product of seventy-four years  
of experience in the manufacture of

## High Grade Machine Tools

Thousands of our machines in shops  
giving daily satisfaction are a recom-  
mendation for our product which should  
not be overlooked  
when buying shapers  
and milling machines.

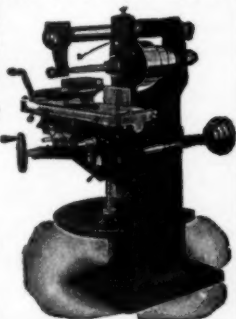
*We will be glad to send  
catalogues on request*

—The—

**John Steptoe Co.**

Stock Yards Station

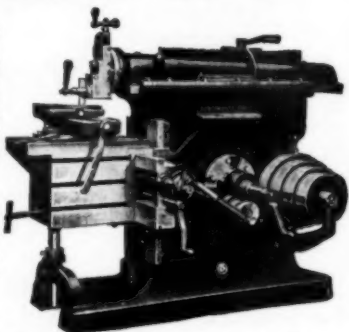
Cincinnati, Ohio



# SHAPERS

12", 14", 16"  
Plain Crank,  
16", 20", 25"  
B. G. Crank,  
either Cone  
Driven or  
through  
Speed Box.

28" and 32"  
Back Gear-  
ed Crank,  
Single Pul-  
ley Drive.



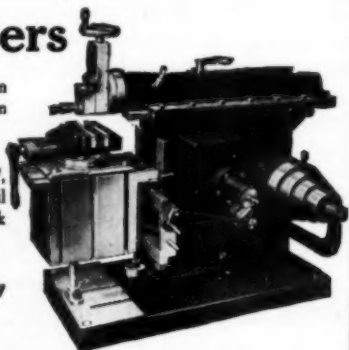
**The Smith & Mills Co.** Station B.,  
Cincinnati, O., U.S.A.

## Shapers

The best medium  
priced Shaper on  
the market.

Built in 16", 20",  
and 24" sizes, all  
back geared crank  
machines.

A few for early  
delivery.



**The Osborne & Sexton Mchy. Co.**  
Columbus, Ohio

# Affords You Real Economy

**Rhodes Combined Shaper and Slotter  
Reduces Costs on Small Work**

**Saves  
Time**



**Saves  
Space**

This low-priced, high-production tool was especially designed for small work, and it made good from the very start. Today it is serving in shops of every size, and in practically every country in the world.

The improved Rhodes embodies all the essentials of the larger, more expensive machines. Being a more compact tool, it does quicker work on dies, tools, models, and in shaping and slotting all kinds of light work. It is so low in price, compared with the larger machines, that every shop can afford to own one. Built as 7½ in. horizontal, 3½ in. vertical, and a combination of the two, in both the floor and bench types.

*Write for Circular and study this economy tool*

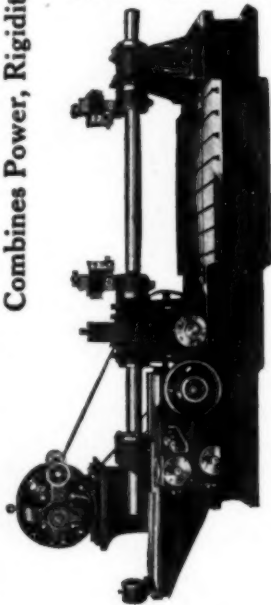
**Rhodes Mfg. Company**  
**Hartford, Conn.**

# Bores Out a Cylinder 48-in. Long at One Setting

## Combines Power, Rigidity and Convenience

The No. 2 "Barrett" horizontal cylinder boring machine is of unusual efficiency and capacity. The patented quick change mechanism provides 10 different feeds.

The bed is 13 ft. 1 in. long—widened portion 48 in. wide by 56 in. long, and 18 in. high. The boring bar is 5 in. in diameter, with a continuous travel of 48 in. in either direction. We recommend the use of a 10 h. p., variable speed, 4 to 1 motor.



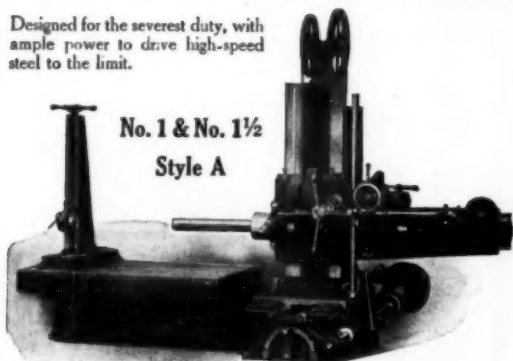
*We invite you to write us about this and other up-to-date machines*

**BARRETT MACHINE TOOL COMPANY, - - Meadville, Pa.**

Builders of all sizes of Single and Double Bar Horizontal Cylinder Boring Machines for boring and facing simultaneously steam, gas, gasoline, pump and locomotive cylinders, also for boring the guides of engine frames and facing off end, besides boring and facing the crank shaft bearings simultaneously.

# G. & L. Horizontal Boring Drilling and Milling Machines

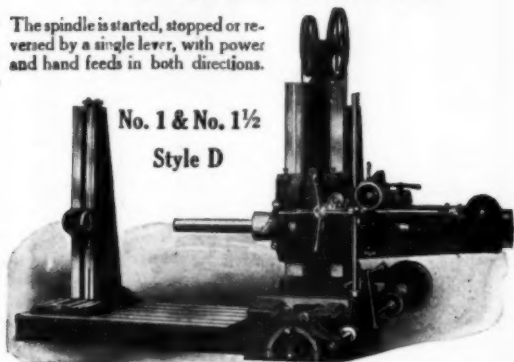
Designed for the severest duty, with ample power to drive high-speed steel to the limit.



**No. 1 & No. 1½  
Style A**

**Either Style with 3½" or 4" Bar**

The spindle is started, stopped or reversed by a single lever, with power and hand feeds in both directions.



**No. 1 & No. 1½  
Style D**

*Write for Full Details and Catalog*

**Giddings & Lewis Mfg. Co., Fond du Lac, Wis.**

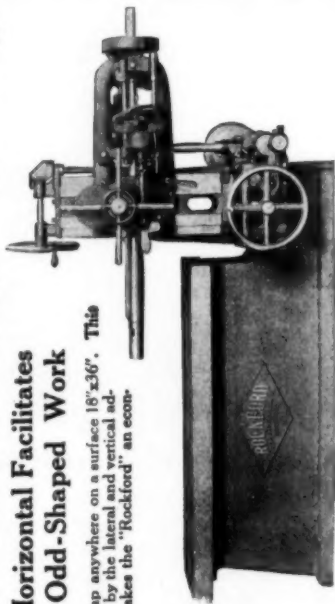
# A High Grade Machine of Unusual Wide Range

## The Rockford Horizontal Facilitates Production of Odd-Shaped Work

It enables you to bore, drill or tap anywhere on a surface 18"x36". This exceptional range is made possible by the lateral and vertical adjustment of the head, and which makes the "Rockford" an economy tool of the highest order.

Drives high speed drills up to 2" and bores up to 6" or over, according to feed used. It has the accuracy for the finest tool and jig work, and ample power for the hardest jobs.

*Have you work for a tool like this? It will pay you to write and get acquainted*



**THE ROCKFORD DRILLING MACHINE CO., Rockford, Illinois**



**Hammond  
Sensitive  
High-Speed  
Radial Drills**

**For Speedier  
Light Drilling  
and Tapping**

Especially built for light drilling and tapping work. A single motion brings the drill over any part of the work. Great range of adjustment. Drill radius 48 inches.

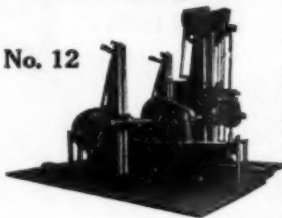
Entirely self-contained—just "hitch" to belt or motor. Three spindle speeds—380, 625, 1000 r. p. m. Can be arranged to give spindle speeds up to 2000 r. p. m. Standard Wall type (without base) can be supplied.

*Write and find out how you can cut your  
light drilling and tapping costs 25% to 33%*

**The Hammond Mfg. Co.**  
Cleveland, Ohio, U. S. A.

## P. & H. Drilling and Boring Machine

No. 12



1. Rapid traverse in each direction can readily be manipulated by slight adjustments on the hand wheel.

2. The spindle speeds are obtained by quick change gears and variable speed motor for either A. C. or D. C. current resulting in the following speed variations:

A. C. Current, 12 to 542 R. P. M.

D. C. Current, 10 to 445 R. P. M.

3. The four changes of feed available for each speed are made by the operator without leaving his position near front end of spindle.

**Pawling & Harnischfeger Company**

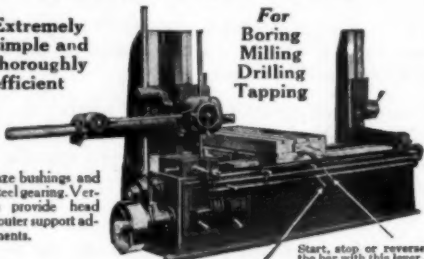
Milwaukee, Wisconsin

## The LAMBERT Horizontal

Assures You of Supreme Accuracy

Extremely  
simple and  
thoroughly  
efficient

For  
Boring  
Milling  
Drilling  
Tapping



Bronze bushings and all-steel gearing. Verniers provide head and outer support adjustments.

Start, stop or reverse any feed with this lever

Start, stop or reverse the bar with this lever.

**The Lambert Machine & Engineering Company**

Cleveland, Ohio, U. S. A.

## Reduction in Costs—

while always desirable—is not always obtainable. The time-saving conveniences of the

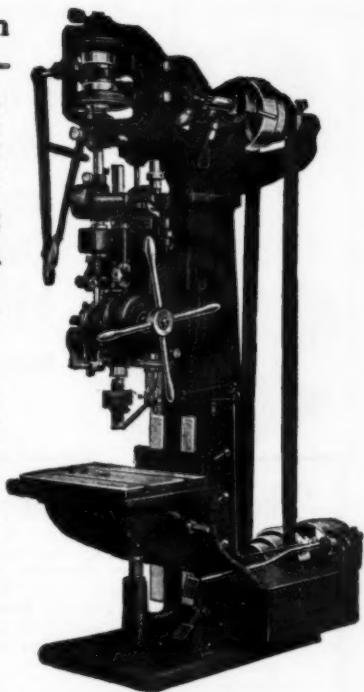
## Turner Turret

put a number of economies within your reach.

It enables you to complete a series of operations at one setting of the work—a sure way of reducing costs.

The rotation of this Turret is *automatic*, so that when spindle is returned to its full height it automatically indexes to the next spindle. There is an extremely wide range

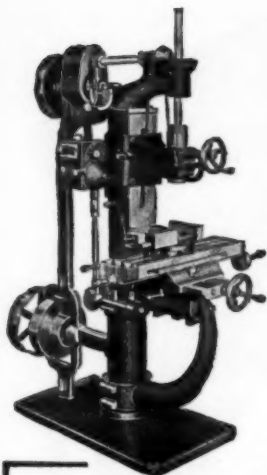
of speeds by means of minor gear changes; speeds may be different for each spindle, and all may be easily changed, to meet special conditions of stock or tools. Bulletin FH gives full details.



*Builders of QUINT TURRET. Ask for Bulletin QH*

## TURNER TURRET

**Turner Machine Company**  
DANBURY, CONN. and Newark, N. J.  
Incorporated with Turner, Atherton & Co., Ltd.,  
Denton, Manchester and Stockport, Eng.



## Knight Milling and Drilling Machines

Made in Three Sizes

### 'They help to keep costs down'

Users in all parts of the country testify to the truth of the above statement. It not only saves time on the ordinary run of work, but in the hands of a real mechanic it is always able to put through in quick time those special jobs which often cause costs to go up beyond what anybody expected.

The three sizes have no equal for all kinds of die, tool and jig work. They mill to perfection flat and angle surfaces, and oval depressions. The tilting table with graduations in degrees always gives the correct angle.

*It will pay you to have a "Knight" of your own*

**W. B. Knight Machinery Co.**

3920 W. Pine St., St. Louis, Mo.

# YES! Some Drill Value

Top-Notch Machines, Sold at the Right Price

The AURORA is the "drill with the pull" because the large pulley diameter and the ratio of gearing used insure the greatest "pull" or *actual drilling power*. Many users have testified to this fact.

An extra large bearing makes the table fool-proof. Should the operator forget to clamp it, the table will not tilt and spoil the work.

Gears are positive, and are made of steel and hardened. The worm wheel drops automatically, giving a positive release.



Not only are the best of materials used but there's ample metal throughout, which gives it the desired rigidity. Auroras all have *speed*, and you are sure of maximum production. Up-to-date methods and low overhead give us some extra values to share with you.

*Write us and give us a chance to prove up*

## The Aurora Tool Works

Aurora, Indiana, U. S. A.



## High Grade Ball Bearing Drilling Machines

With 1, 2, 3 and 4 Spindles

*Write for descriptive circular*

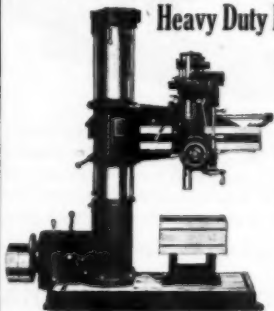
**Francis Reed Co.**

43 Hammond St.

**Worcester, Mass.**

It will be worth your while to carefully consider  
these distinctive features of the

## Heavy Duty Mueller Radial Drill



Patented Stationary Column.

Combination Positive and Friction Feed.

Effective, yet extremely simple control.

Combination Low and High speed reverse for backing out taps.

And many others which this space will not permit us to enumerate.

**The Mueller Machine Tool Co.**  
*Radial Drills and Lathes* **Cincinnati, Ohio**

## FEATURES

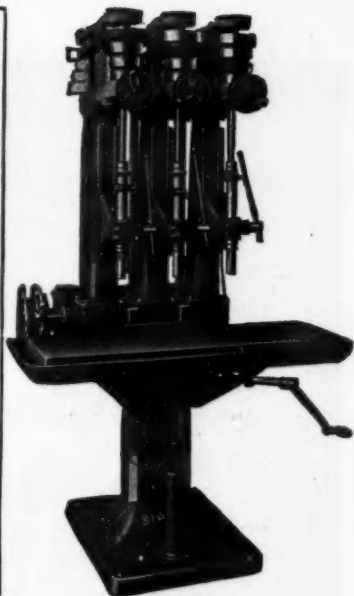
**Quick  
Change Speed**  
Change in 2 seconds

**Most  
Efficient Drive**  
No belt troubles

**Safety First**  
All parts protected

**Heaviest  
Drill Made**  
Yet very sensitive

**All Ball Bearings**



## An Hour a Day Saved

on each drill foots up to a handsome total in the course of a year.

### The Sipp Quick-Change-Speed Drill

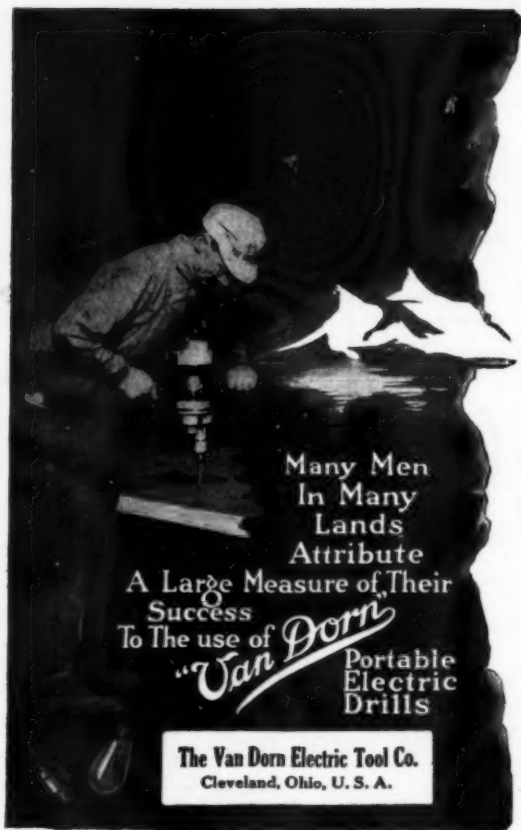
is a direct time-saver. The right speed for each job is instantly and easily set by simply throwing over a lever on a dial, hence operatives *willingly* change speed when desirable.

*Write for Bulletin No. 4*

**The Sipp Machine Co.**

**Keen Street,**

**Paterson, N. J.**



Many Men  
In Many  
Lands  
Attribute  
A Large Measure of Their  
Success  
To The use of *Van Dorn* Portable  
Electric  
Drills

The Van Dorn Electric Tool Co.  
Cleveland, Ohio, U. S. A.

# The Improved EDLUND

A Modern Quick Change Sensitive  
Drilling Machine that's Better

## One to Six Spindles

### *As the Eye-Ball*

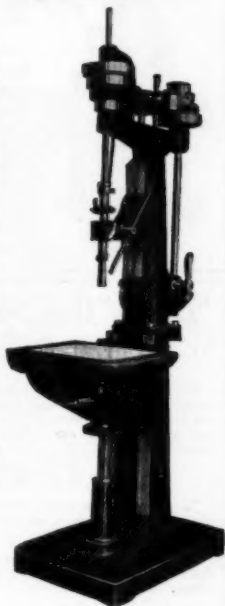
With ball bearings throughout, friction and vibration is reduced to the minimum—the smooth action reminding one of the perfect working of the human eye-ball. Ten ball bearings are used on each spindle, and a small reservoir at the top of spindle sleeve provides perfect lubrication without frequent oiling.

Operator makes speed changes instantly by shifting a handle a quarter turn. The drive belt can be shifted from either side of machine.

### *A Straight Endless Belt*

transmits the power, and thereby the objectionable quarter turn belt is eliminated. There are four spindle speeds of 510, 816, 1273 and 2038 r. p. m. with drive pulley running at 500.

And the foundation is right—the frame being of heavy, one-piece construction, with extra large base.



*There are more production-boosting features  
Send for complete specifications today*

**Edlund Machinery Company, Inc.**

250-300 Huntington Ave., Cortland, N. Y., U. S. A.



## Murchey Tools

### Satisfy the Inspector

The threading done by the Murchey Collapsing Taps and Expanding Die Heads comes uniform and accurate, and naturally the inspector is pleased.

They save money and time because they increase production. They are simple in design and quick in adjustment.

*The high labor costs of today make it imperative to use the best tools. Write for details.*

**Murchey Machine & Tool Co.**

58 Porter Street, Detroit, Mich.

## "Demco" High Speed Accurate Drills

For drilling small holes, extremely high speed is an essential, to enable the drills to cut through material instead of being forced through. "Demcos" are built for a maximum speed of

**12,000 R. P. M.**

This not only insures maximum production of clean-cut work but reduces breakage of drills to minimum.

"Demcos" have many other exclusive features which we will be glad to tell you about. Drop us a card now.

*Also made in floor type,  
with one to four spindles*



**The Demco Machine Tool Co.**

*Successors to The DeMooy Machine Co.*

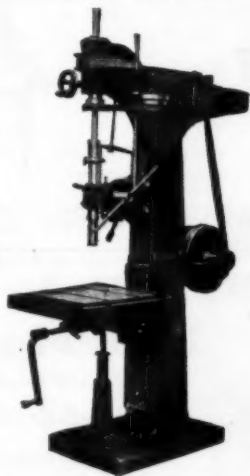
706 Frankfort St., N. W.

Cleveland, Ohio

# The *Avey* Ball Bearing Drilling Machine

Operating Adjustments Simple, Direct and Positive. Power and Speed to suit the job. Extreme Accuracy.

Get  
the  
Best



It  
Saves  
You  
Money

Real, genuine, satisfactory service starts in the designing. That is where every little detail is studied with a view to producing a finished machine that will show real results in quality and quantity production.

*May we post you on this excellent machine?*

**The Cincinnati Pulley Machinery Co.**  
Cincinnati, Ohio

## A 3-to-1 Sure Thing



### Sellew Adjustable Drill Heads

Will drill 3 holes at a time instead of one, with a corresponding increase in output.

We also make Special Drill Heads with fixed spindles.

*Write us today. You take no chance on a sure thing.*



**SELLEW MACHINE TOOL CO.,** Pawtucket,  
Rhode Island



## "Buhr" Drill Heads

**Adjustable and Fixed Center  
All-Ball-Bearing**

Adjustable from 2 to 12  
spindles.

Fixed center, any number  
of spindles.

We guarantee our Heads  
to stand up to capacity.

**Nelson-Blanck Mfg. Company**  
Detroit, Mich.

# Canedy-Otto Power Drills

## New and Improved 20" Models

We take a good deal of pride in our 20" drills. They are simple in design, rugged in construction, and smooth, noiseless and rapid in operation, with perfect accuracy for drilling holes up to 1½-inch. They have all the graduated and automatic features found in high-priced drills.

The bearings are of the best babbitt metal, with *Randall hydraulically pressed sheet graphite cones*, which increase their life 300 to 400 per cent. The upper shaft has split bearings. All gears are cut on automatic machines.

Equipped, if desired, with a powerful direct-connected motor, with all-spur-gear drive; also with an improved tapping attachment of very few parts, which is accurate, powerful and rapid—operated by the foot, leaving hands free to handle work.

*The price is right, too. Write for complete data.*

**Canedy-Otto Mfg. Company**  
**Chicago Heights, Ill.**

Manufacturers of Forges, Blowers, Drills, Lathes and Grinders



# Thor

## Universal Electric Drills

Licensed Under Burke Universal Motor Patent

Indispensable for all kinds of drilling, reaming and wood boring in the building of automobiles, steel and wood cars, boilers, auto bodies, and in railroad and structural shops, ship and dry dock work and machinery repairs. Can be operated on alternating or direct current, 110 to 250 volts. Furnished with cord and suitable feed attachment ready for immediate use. Attach to any lamp socket.

000	Drilling Capacity	1.4"
00	"	5-16"
0	"	3-8"
01	"	1-2"
1	"	9-16"



No. 6 Electric Grinder.

*Jacobs Chucks furnished as regular equipment.*

## Independent Pneumatic Tool Company

Chicago	New York	Pittsburgh	Cleveland	Detroit
San Francisco	Birmingham	Montreal	Toronto	



## The "KNOW HOW" of 65 Years

### Found in the Silver Line of Drills

YOU'RE NOT GAMBLING when you install Silver Drills. They were standard machines in your grandfather's day, and they have not lapsed from their proud position.

We illustrate our 20" Upright. This is also made in 2, 3 and 4-spindle gangs. A choice of plain lever feed, lever and wheel feed, power feed and automatic stop, or with back gearing. *Your inquiry will have our careful attention.*

**Prompt Deliveries**

**The Silver Mfg. Co.,** <sup>295</sup> Broadway, Salem, Ohio

## The Alert Boring And Facing Tool

High Speed Steel Blades



Made in Three Sizes

FOR USE on turret lathes, automatic screw machines and drill presses, for facing, counterboring and radiusing where a fine finish is desired, and for boring large holes where the cost of high-speed drills is prohibitive. It has bored very accurate holes with a good finish up to six inches deep.

WE ALSO MAKE Ratchet Tap Wrenches, Roller Grip Arbors and Roller Grip Mandrels—all patented; High-Speed Solid Tap Wrenches and Hand Knurling Tool Holders.

*Write for descriptive circular "H"*

**Alert Tool Co.,** 237 N. 6th St.  
Philadelphia, Pa.

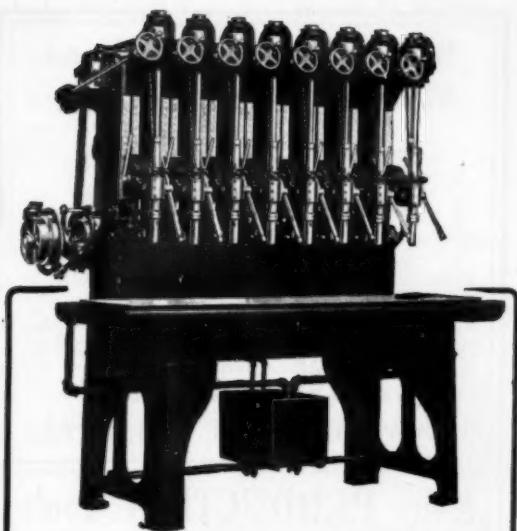
## Madison Boring Cutters and Bars Do Better Work than Reamers



AND NOT ONLY BETTER, but the easy, quick adjustments assure you a worth-while saving of tool room labor. They make absolutely straight holes of any size, and so exact that grinding to size is unnecessary. Adjustable to .00025". Usable in any metal.

*The GREATEST little tool made. Write for details*

**MADISON MANUFACTURING CO., - Muskegon, Mich.**  
*Tool Agents Wanted.*



## Henry & Wrights 1 to 8 Spindles, for $\frac{3}{4}$ " Drills & Smaller

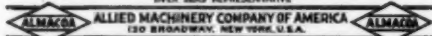
H. & W. Drilling Machines, when used according to the scientific Feed and Speed Chart printed in our Catalog, have produced some astonishing results.

It is because they drill more holes at less cost than one concern alone has between two and three thousand H. & W. drilling spindles in operation, and that other large shops are standardizing on Henry & Wrights. They are winners.

*Better have the Catalog, which explains fully*

**The Henry & Wright Mfg. Co.**  
760 Windsor St., Hartford, Conn.

OVER-SEAS REPRESENTATIVE



*Principal Foreign Offices: Paris, Turin, Zurich, Barcelona*

## Saving Time, Material and Mistakes is Economy



**Waterston Combination Drill and Micrometer Boring Head No. 10**

Dial is graduated in 1000's of an inch, to allow accurate off-set boring on jigs, fixtures, and experimental work. It eliminates mistakes, saving not only time, but material as well, and also tends to give your shop greater efficiency. Unsurpassed for use on milling or horizontal boring machines.

*Why not look into it before you forget it?*

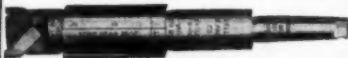
**J. M. WATERSTON,**

78 Woodward Ave.  
DETROIT, MICH.

## Kelly PRODUCTION Tools



**"XX Type C" Head  
For Boring Bars**



**Rigid Type Tools**

**Adjustable—Replaceable Blades**

*Send for our Catalog J-5*

**THE KELLY REAMER CO.,**

**Cleveland, O.**

**COUNTER  
BORES**



ADJUSTABLE  
AND  
REPLACEABLE  
HIGH SPEED  
STEEL BLADES  
HARDENED  
AND  
GRINDING  
REPLACEABLE  
DURING  
CUTTING

# Model "E-50" Sensitive Bench Drill Press

This 2-speed, direct motor drive, high-speed ball bearing drill is especially designed to care for all work, ranging from the smallest to a  $\frac{1}{4}$ " hole.

Can be furnished with special pulleys to drive main spindle any speed up to 10,000 R. P. M.

Main spindle is heat treated and ground to size; it is guided through a quill with support at each end in an annular ball bearing.

End thrust is taken up by an end thrust ball bearing under feed arm.

A quick adjustable table has a working surface  $5\frac{1}{2}$ " x 5", and will take work up to  $4\frac{1}{2}$ " in height.

Surface of table is ground to insure accuracy.

Table has a self-cleaning taper, which keeps the precisely ground main column free from chips, and serves also as a guard to prevent injury to column.

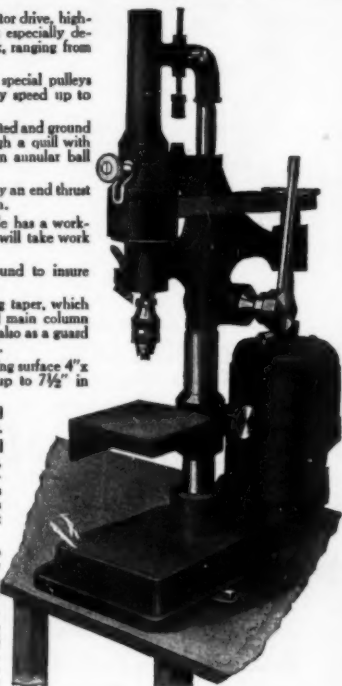
Base has a ground working surface 4" x 6", and will take work up to  $7\frac{1}{2}$ " in height.

Base has oil groove and self-cleaning column support.

Your attention is called to another special feature, which is a spindle lock enabling quick changes of drills without the operator's hands coming in contact with belt or pulleys.

An idler pulley takes up any belt stretch which may occur in the endless woven canvas belt, without impairing sensitiveness of machine.

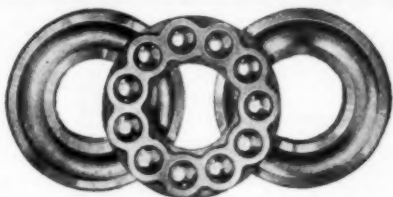
Front pulley and upper part of spindle are guarded by a semi-tubular guard insuring safety. Machine may be operated either by hand or foot control.



Height over all.....24"  
Base..... $7\frac{1}{2}$ " x 18"  
Diameter of spindle..... $7/16$ "

Spindle feed..... $2\frac{1}{4}$ "  
Weight.....62 lbs.  
Will drill to center of a 6" circle.

**The High Speed Hammer Co., Inc.**  
Dept. 14  
Rochester, N. Y.



# BEARINGS

**LIGHT DUTY**

**HEAVY DUTY**

**ALL TYPES**

*Send for 1919 Bulletin giving standard dimensions*

**THE GWILLIAM COMPANY**  
253 WEST 58th ST., (at Broadway), NEW YORK

## Castellating Machine



Production on one-fourth to one-half inch Nuts

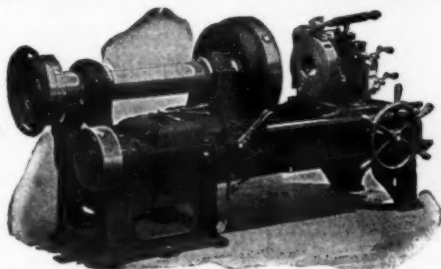
**400 to 700 per hour**

Does a clean, accurate job.

*Enquire of your dealer or write us for full details.*

**THE CRAFTSMAN TOOL CO.**  
CONNEAUT, OHIO

# Better, quicker pipe threading is yours with B. & K. machines



(No. 4 Peerless. Belt Drive. All Gears are Covered)

**T**HERE ARE MACHINES regarding which you have your doubts even after seeing them at work. There are others which you at once put in the wheat and gold class—they are always good and always satisfactory, and the inferiority of substitutes is immediately apparent.

We recommend Bignall & Keeler pipe threading machines because we know them from A to Izzard. They represent 33 years of effort and manufacturing experience, and they embody the speed, convenience and stand-up-ability that guarantees maximum production and rock-bottom costs.

**Your Choice of 17 Styles and Sizes**

*Catalog and full particulars gladly sent on request*

**Bignall & Keeler Machine Works**  
Edwardsville, Illinois



**Davie Gauging Machine.**  
Graduations in .0001  
Height 17" — Length 15" — Width 9"

BURTON, GRIFFITHS & CO., Ltd.  
Lodgate Sq., Lodgate Hill, London, E.C.  
Agents for Great Britain  
SOC. ANONIMA ITALIANA ALFRED HERBERT, Milan, Italy. Agents for Italy

**For inspection work where limits are close and accuracy and speed essential**

1. Measuring Plug Gauges in readings of .0001
2. Measuring Interchangeable Parts in readings of .0001
3. Measuring Drill Jig Bushings in readings of .0001
4. Measuring Pistons in readings of .0001
5. Measuring Ball or Roller Bearings in readings of .0001
6. Testing Concentricity of Form Milling Cutters .0001
7. Testing Concentricity of Spindles of various designs .0001
8. Settling Shop Disputes over Micrometer Readings
9. Speeding up Production Gauging

Any attachments to suit your needs

The Davie is Standard Throughout America and Europe

It is used in The Ford Motor Plant Alone

*Send for catalog*

**The Davie Tool Co.**  
E. 118th & Euclid Ave., Cleveland, O.

SOC. ANONYME ALFRED HERBERT  
47 Boulevard de Magenta, Paris

Agents for France

Agents for Italy

## Errors Shown Up Quickly

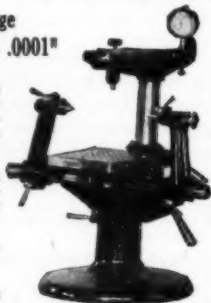
**Universal Amplifying Gauge**  
**Saves Time and is Accurate to .0001"**

It puts 75% of snap gauges out of business. Is adjustable in a few minutes for any size piece up to 5½" on the plate, and 8" between centers.

When gauge is set, the parts can be gauged *as fast as the workman can handle them*. Popular with big automobile concerns.

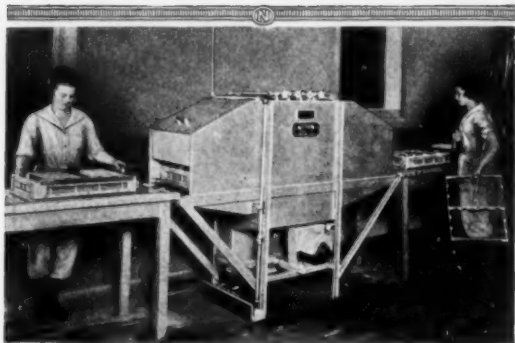
Specially valuable where the Swedish gauge system is used.

*Catalog No. 100 tells the whole story*



**THE NORTH SIDE TOOL CO., Dayton, Ohio**

Manufacturers of Special Tools, Dies, Jigs and Fixtures



*Two Girls and a NIVIN Do the Work of Four Men*

## Wash Metal Parts at Half the Time and Cost

*With the NIVIN Metal Parts Washing Machine*

The NIVIN handles parts of all shapes and sizes.

The NIVIN does away with Open Tanks, Hand Labor  
and Wet Floors — does away with Gasoline —  
ends fire risk.

The NIVIN cuts Time and Labor cost in half and pro-  
duces the same perfect quality of work all day long.

The NIVIN never tires — never loafs.

That is the kind of service the NIVIN is now giving  
in some of the most efficient plants in America.

# NIVIN

METAL PARTS WASHING MACHINE

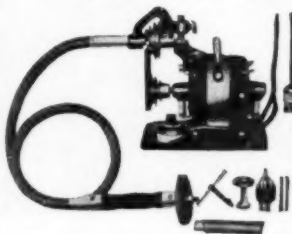
NIVIN flexible units fit into any factory system.

*Write for Literature*

**The NIVIN MANUFACTURING COMPANY**  
843 Larrabee Street Chicago, Illinois

## For Heavy or Light Grinding

**"Strand" Flexible Shaft is Dependable**



If you want to save time, add this handy portable tool to your equipment.

The "Strand" flexible shaft is made by special machinery, and our method of attaching the end connections welds it into a unit as tough as steel. Friction has been reduced to the absolute minimum.

*Our several types and sizes are the result of 15 years' practical experience. Write for Circulars*

**N. A. STRAND & CO.,** 625 W. Jackson Blvd.,  
Dept. H, CHICAGO

## Over 20,000 Outfits in Use

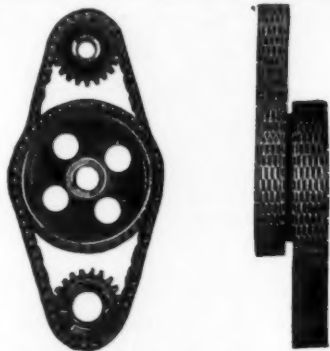
**Cuts the Time More Than Half**



**Giving  
Brush  
Finish  
to  
Auto  
Bodies**

Stow Flexible Shaft No. 4, with  $\frac{1}{2}$  h. p. motor, driving a 6" wire brush on sheet aluminum body, which conditions the metal to take a good coat of paint. Will also grind, ream and drill. Write us today for details.

**STOW FLEXIBLE SHAFT CO.,** 26th & Callowhill Sts., Philadelphia, Pa.



## War Record Not Made Public

### The "Whitney" Special Quality "Type M" Chains

made a great showing during the war years 1916, '17 & '18

Our tests and demonstrations were made on prominent 8-cylinder motors in service on a large number of cars owned in the State of Connecticut.

During this long period not a single "Whitney" Chain or Sprocket had to be replaced and the condition of every Drive has been pronounced remarkable.

One Drive recently examined had given over 35,000 miles' service and both Chains and sprockets were in such perfect condition that they appeared good for more than double that record (Sprockets having no adjustment).

The links of this SPECIAL CHAIN have finished faces and reamed holes, and the smooth faces do not damage the Sprocket teeth.

Our war contracts were such that we did not announce this SPECIAL CHAIN until after the conflict was over.

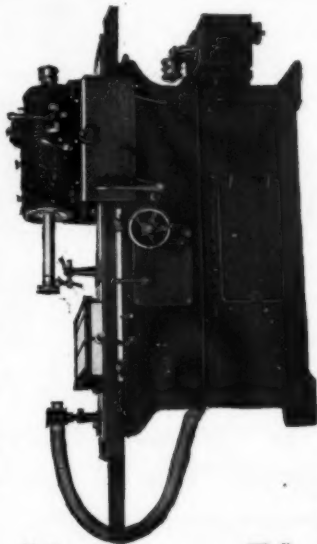
**The Whitney Manufacturing Co.**  
Hartford, Conn.

# Accuracy and Precision

are followed out to the last detail in the construction and testing of the

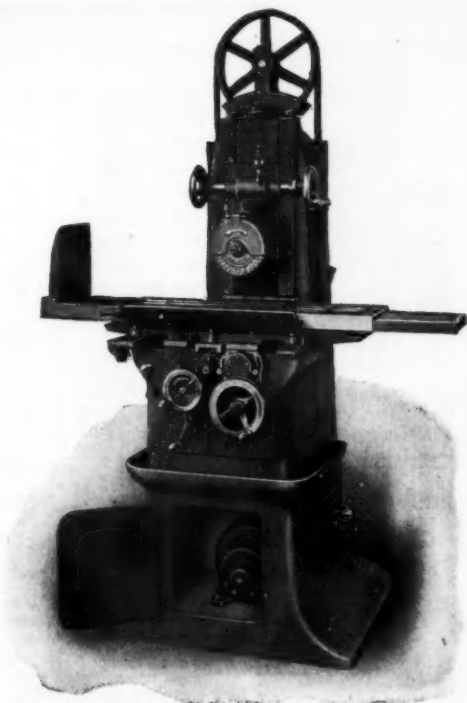
## Whitney Cylinder Grinder

equipped for grinding all kinds of Gasoline Engine Cylinders.



*Write for new catalog*

**BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass, U. S. A.**

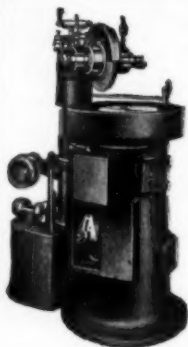


## **An Epoch-Making Machine**

### **The Abrasive Tool Room Surface Grinder**

An extremely rigid, powerful machine, fully 50 per cent heavier than any others of its type, for that much-needed modernizing of your tool-room surface grinding. Write for specifications; they will suggest some grinding economies.

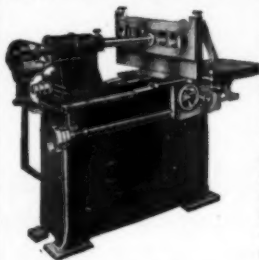
**Abrasive Machine Tool Co.**  
**East Providence, R. I.**



The Bristol 12' Precision Rotary Surface Grinder grinds flat, convex and concave surfaces to within .00025" of manufacturing accuracy. May we mail you the description?

**Bristol Machine Tool Co., Bristol, Conn.**  
*Successors to The C. G. Garrigus Machine Co.*

## Simple, Compact Internal Grinder for Accurate Work on Engine Cylinders



### The "Schmidt"

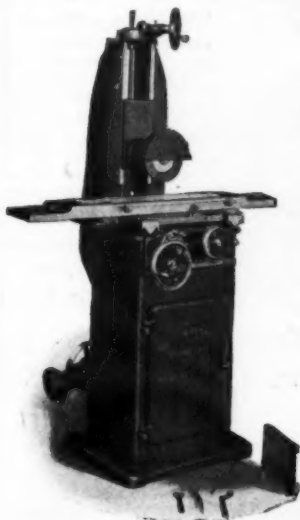
Has ball-bearing rocker arm countershaft and ball-bearing in rear end of emery wheel spindle. This and other improvements, which make for rapidity and accuracy, enable you to reduce costs to a minimum. A simple, compact machine, thoroughly dependable in every way. Write for description.

**Prompt Deliveries**

**B. L. Schmidt Co., Dept. A 8, Davenport, Ia.**

# The REID—Rigid and Reliable

## A Surface Grinder for Precision Work



This modern machine tool is built for and meets the most exacting grinding requirements. It is of correct design and contains ample metal to insure the first requisite for accurate grinding—*rigidity*. The spindle of

### The Reid No. 2 Surface Grinder

is hardened, ground and lapped; runs in phosphor bronze boxes, with adjustments for both wear and end play of the spindle. Vertical adjustments are obtained by a hand wheel graduated to one-half thousandth of an inch. Finer adjustments may be accurately sighted.

The table is 46" long, 8" wide, with a working surface 18"x6" and three T slots. The crossfeed is automatic in both directions, with a range of .007" to .084" feed at each end of the stroke. Power feed or hand feed, as desired. Belt or motor drive.

*Write us for full details of this dependable grinder*

**Reid Bros. Co.** 59 Park St.  
Beverly, Mass.

Export Department, 77 Broad St., New York City  
English Agents, Oliver Machinery Co., Ltd., 201-03 Deansgate, Manchester, Eng.  
Also Manufacturers of the Reid Universal Angle Fixture



## Premier Universal Tool and Cutter Grinder

With a swing of 8" and capacity of 15" between centers, together with the regular equipment furnished, it will grind almost any cutter or other tool used in a modern tool room. Workmanship, material and design of the highest quality.

*Write for descriptive  
Circular*

**Immediate Delivery**

## Simmons 10" Universal Index Centers



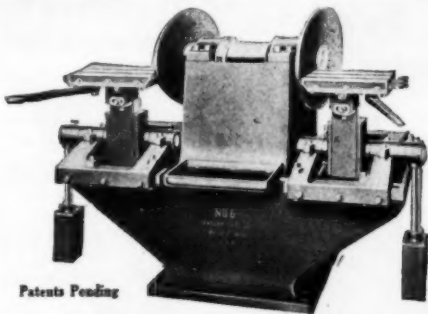
Manufactured with the idea of supplying the market with a device in which accuracy, durability and simplicity are the main issues and in which no one feature is sacrificed for another.

The price is the lowest consistent in keeping with the above standards. Our production is such that immediate delivery can be made.

***You need one? Order now!***

**Simmons Machine Co., Inc., Albany, N. Y.**

New York, 1001 Singer Bldg. Detroit, 804 Dime Savings Bank Bldg  
Buffalo, 358 Ellicott Square



Patents Pending

## Badger Disc Grinder

**Embodying the Very Latest Principles  
Of Modern Disc Grinder Construction**

Our new line of Badger disc grinders represent the first notable advance in disc grinder design and construction that has been made within the past 10 years.

There is no question about the Badger disc grinder being a manufacturing tool—it's built for heavy cuts, not for polishing purposes. Badger construction means accurate results easily and practically obtainable.

The new lever feed work table is so designed that maximum pressure can be secured at very slight energy on the part of the operator. Other patented features of this table make it possible to work to close requirements on a manufacturing basis. The patented wheel truing device is attached to the table and interferes in no way with fixtures or work being ground.

The patented rockershaft construction furnishes a rigid bearing on each side of the table support, thereby eliminating all of the vibration present in the ordinary disc grinder construction. The absence of this vibration improves the quality of workmanship and gives you maximum service from your disc grinder. Badger disc grinders give you bigger production, more satisfied workmen, closer accuracy and decrease your expense for grinding discs and wheels.

Send samples of your work to our Service Department for guaranteed production figures.

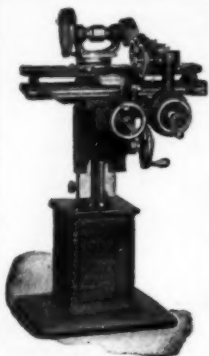
We can supply a complete line of disc grinder accessories such as Badger grinding discs, disc wheel cement, abrasive cylinders, etc. Immediate delivery.

## Badger Tool Company

E. B. Gardner, Pres. "Disc Grinder Service" R. D. Gardner, Treas.

**Beloit, Wisconsin, U. S. A.**

*Representatives in all principal cities and foreign countries*



**YOU CAN DEPEND ON THE**  
Speed, Accuracy and Rigidity  
of the

**STERLING**

## **UNIVERSAL TOOL GRINDER**

for efficient service in your tool room just as we depend on this Grinder in maintaining our reputation as builders of high grade, dependable machinery since 1874.

### **OUR CATALOG**

Tells the "Why" of Sterling grinder construction

**MCDONOUGH MFG. COMPANY,** Machine Tool  
Eau Claire, Wisconsin Department

## **A Modern Bench**

### **For Tool Makers and Bench Hands**

Let us refer you to manufacturers who have installed an equipment of these modern benches. They add materially to the workmen's efficiency, because they have a place for everything, promote order and save time. They are built of select yellow pine with glued-up 1½"



maple top, and have six drawers, a blue print slide, a shelf, three large compartments for stock, and a 5" guard around three sides of top. Write for more complete description and price.

**THE RITCHIE-WERTZ CO.,** Dayton, Ohio

# Marschke Motor Driven Grinders

For Alternating or Direct Current



## ECONOMY A. C. GRINDER (See Illustration)

**2 or 3 Phase, 60 Cycle  
220-440 Volts**

Emery wheel, 12"x2".  
Motor, 3 h. p.  
Emery wheel collar  $5\frac{1}{2}" \times 1\frac{1}{4}"$ .  
Length of arbor, 26".  
Arbor where wheel goes,  $1\frac{1}{4}"$  diameter.  
Center of arbor to floor, 39".  
Base on floor, 20"x23".  
Speed, no load, 1,800 r. p. m.  
Speed full load, 1,720 r. p. m.  
Motor entirely enclosed.  
Journal self-aligning S.K.F.b.b.  
Automatic oil switch.  
Exhaust fan, 6"x2".  
Exhaust fan bearing, S.K.F.b.b.

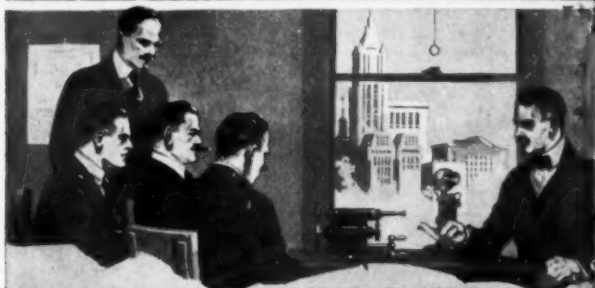
**2 or 3 Phase, 50 Cycle**  
Motor  $2\frac{1}{2}$  h. p. Speed, 1,500  
r. p. m.  
All other dimensions same as  
above.

The Marschke Economy Grinder, either a. c. or d. c., is a standard electrically driven tool of the highest economy. All the electrical apparatus is within, and all that is necessary to install it is to place the machine on the floor and connect two or three wires.

Among its features are a foot pedal, which is fool proof and a big time saver; adjustable cast steel hood and adjustable steady rest; spark breaker to take up space in hood as wheel wears down, which adjusts automatically with steady rest; removable hood cover, with single thumbcrew; stationary exhaust tube; an efficient exhaust fan which starts with motor—no separate exhaust system necessary; double water pot, etc.

*Don't miss this Economy Grinder; want description?*

**Marschke Manufacturing Co.**  
Indianapolis, Ind.



"I 'VE called you in to see our latest purchase—a DUMORE high-speed grinder. You all know that our tool room has been the weakest spot in the whole organization, as our troubles in die and gauge making show, but this tool is our remedy. Now I am confident we can not only obtain correct standards in our shop but we can also eliminate waste of time and labor. We need the DUMORE in our business."

Make the standards of your tool-room right. The DUMORE insures accuracy because its high speed gives wheels the correct cutting speed and its perfect running balance eliminates vibration. It is portable, weighs but seventeen pounds, and can be used from one end of the shop to the other. Chatter-marks, taper or bell-mouth are unknown in the shop equipped with the DUMORE.

If you haven't a DUMORE grinder already at work, your shop is not as efficient as it might be. Have your supply dealer show you this tool or ask us for literature and prices. Write today, and remember the name—DUMORE.

**WISCONSIN ELECTRIC CO.**

4315 16th Street

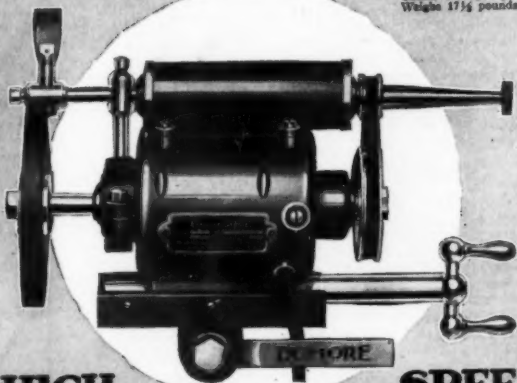
**RACINE, WIS.**

# DUMORE

*Here's What We've  
Been Looking For!*

**EQUIPMENT A**

For general tool room use.  
Includes High Speed In-  
ternal Spindle A with reach  
of 3 inches. 30,000 R.P.M.  
Comes fully equipped.  
Weighs 17¼ pounds.



**HIGH SPEED  
GRINDERS**

# Perpetually Sharp Tools

Would be ideal--the Thompson Universal Grinder makes sharpening so easy that the ideal is practically realized

Why curtail your production with dull tools when this machine will keep them in fit condition all the time?

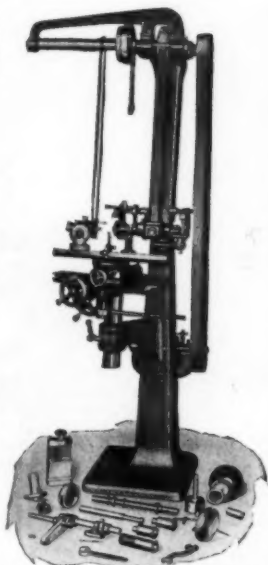
## The Thompson

sharpens all forms of cutters and reamers quickly and accurately; takes care of all kinds of small tools, and besides does dependable cylindrical, surface and internal grinding. In this way it is of assistance to the manufacturer both directly and indirectly. It is very

## Convenient

and so simple that ordinary help does expert work. We build them in the self-contained type with jackshaft drive, as shown in cut, or self-contained with motor drive, or belt driven with separate countershaft.

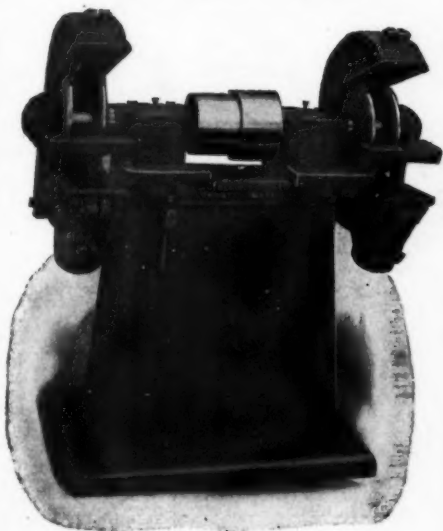
*Superintendents enjoy looking over our Bulletin No. C-3. Send for a copy today.*



Self-contained—Jackshaft drive

**The Thompson Grinder Co.**  
Springfield, Ohio

# Grind it on a "Blount"



No. 6½

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

**J. G. BLOUNT CO., Everett, Mass.**

# Grand Rapids No. 1

Universal Cutter, Reamer  
and Tool Grinder

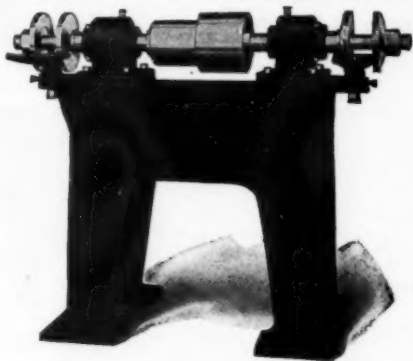


Simple in Design  
Efficient in Service  
Accurate in Workmanship  
Economical in Cost

*Ask for bulletin giving full particulars*

**Grand Rapids Grinding Machine Co.**

17 Ottawa Ave., N. W.  
Grand Rapids, Michigan, U. S. A.



# BALL BEARING GRINDER

**5 Sizes for Wheels, 8"x1" to 30"x4"**

Aside from the very great advantage of ball bearings over any other type in the matter of power consumption, there is the further material advantage of greater longevity, as well as a considerable saving in lubricant, ball bearing machines requiring lubrication only every few months.

Bearings employed are of highest grade American make—double row combined radial and thrust type, and fully guaranteed by both the manufacturers and ourselves.

*For Complete Specifications and Description,  
Ask for Bulletins 8 & 9*

**The Webster & Perks Tool Co.**

**Box 1340, Springfield, Ohio, U. S. A.**

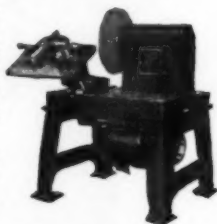
## Portable Gear Cutter Grinder

**Fenn No. 1 is a great time saver**

Why waste time with a large stationary cutter grinder when you can easily carry a Fenn No. 1 to any bench in the shop? The self-contained motor can be instantly attached to any 110 v. lamp socket. In thirty seconds you can change from grinding a 40 pitch to a 3 pitch cutter. The time thus saved soon pays for the machine.

The Fenn No. 1 is unsurpassed for grinding gear cutters, milling cutters, cutting brass tubing, etc.

*Write for details of this low-priced, highly-efficient machine.*



**Fenn Manufacturing Company**  
Hartford, Conn.

W. A. FENN

W. L. FENN

Cable Address "Fenn"—Western Union Code

## Manhattan Surface Grinder

**Efficient—Precise—Quiet**



The assembling of this grinder is entrusted only to the best machinists and to expert toolmakers—the result, a revelation in quiet efficiency. It is no camouflaged duplicate of other grinders, but a grinder with many detailed improvements and special features of its own.

It is so massive and rigid—yet occupies little floor space—that vibration is eliminated. Both feeds have dials graduated to 1000's of an inch, which means extreme accuracy.

*May we send complete specifications?*

**Manhattan Machine & Tool Works**  
Dept. A., Grand Rapids, Mich.

# *Greenfield*

## Plain Grinder



**A  
Low Cost  
Machine  
of High  
Production  
for  
Small  
Cylindrical  
Work**

**Low Cost:** (1) The Hydraulic Table Feed is so simple in construction that it eliminates many expensive parts, and (2) in a machine for small work only we do not have to use parts of excessive weight.

**High Production:** The table drive is so simple, smooth and effective that it permits two to three times as rapid strokes as on other grinders, so that it fully equals the production of larger machines that take heavier cuts with slow movements.

*The price and output will both surprise you*

**Greenfield Machine Company**  
**Greenfield, Mass., U. S. A.**

# Ott Grinders

Combine the essentials of  
**ACCURACY** and **RIGIDITY**  
with **SIMPLICITY** of design

Simplicity accounts for their price, and for  
their popularity among good operators.

5"x18" Plain—10"x32" Universal—6"x6" Internal

**Ott Grinder Company**  
200 West Tenth St., Indianapolis, Ind.



## A Simple, Accurate Hand Surface Grinder

For grinding a flat, true surface on punches,  
dies and other machine parts. The —

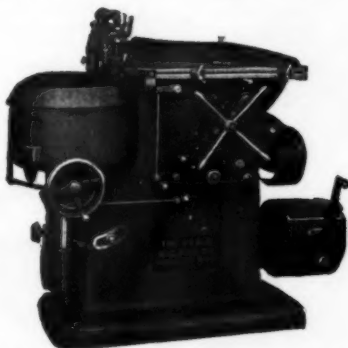
### "Cady of Canastota"

Hand Surface Grinder fully meets the  
three requirements of simplicity, accu-  
racy and a high productive capacity.  
Its practical design and workmanlike  
construction also insure strength and  
durability. It has large bearings, and  
all sliding surfaces are carefully scraped.  
Both longitudinal and vertical adjust-  
ments are graduated.

*Write for full data on this practical, efficient tool*

**C. N. CADY CO., Inc., Canastota. N. Y.**

# The New Heald Rotary Surface Grinding Machine



Designed for manufacturing purposes, built massive and simple, with all necessary mechanical refinements to get various speeds and adjustments.

The pull of the spindle belt is downward. All adjustments of spindle bearings made on front bearing. Three speeds to the slide and three to the chuck, independent of each other. Grinds ten degrees concave or convex. Automatic or hand vertical feed to the chuck. Built in two sizes, 8" and 12". Quick deliveries can be made.

*Further information on request*

**THE HEALD**  
**MACHINE & COMPANY**  
Worcester - Massachusetts

All Machine Dealers Will Supply Heald Chucks

# New Yankee Drill Grinder

## Style "WPL"



**Capacity, No. 52 to 2¼".**

**We offer nearly 100 Styles and Sizes of  
New Yankees.**

**A drill can be ground right on a New  
Yankee by any boy in your shop.**

*Catalog on request*

**Wilmarth & Morman Co.**

**Master Grinder Makers**

**1185 Monroe Ave., N. W., Grand Rapids, Mich., U. S. A.**

***"Sharp Tools  
Defeat Sharp  
Competition"***



**New No. 190  
"WELLS"  
GRINDER**

will do everything that  
many more expensive  
machines will do.

See it on your dealer's  
floor or write for Ma-  
chine Tool Cata-  
log No. 39.

Machine Tool Division



**GREENFIELD TAP & DIE  
Greenfield, CORPORATION Mass.**



## Beaudry Hammers

**For General Forging**

**Saves Fuel, Time and Labor.  
Cuts Forging Costs in Two.**

*Belt or Motor Driven*

**Beaudry & Co., Inc.**

**141 Milk St., Boston, Mass.**

**SALES AGENTS—**The Machine Tool Engineering Co., Inc., New York City; Brown & Zortman Machinery Co., Pittsburgh, Pa.; W. M. Pattison Supply Co., Cleveland, O.; Eccles & Smith Co., San Francisco and Los Angeles, California; Hallidie Mchy. Co., Inc., Seattle, Wash.; The Portland Mchy. Co., Portland, Ore.; Alfred Herbert, Ltd., Coventry, Eng., London, Paris, Calcutta, Yokohama; Sherritt & Storer Co., Philadelphia, Pa.; The English Tool & Supply Co., Kansas City, Mo.; The E. L. Essley Mchy. Co., Chicago, Ill. and Milwaukee, Wis.



**It's Portable**

## The Barr Pneumatic Hammer

**Is recognized today by progressive shop men as the ideal light power hammer!**

A tool which should be in every up-to-date shop and tool room. A tool which repays its cost in short order and which you will truly appreciate every day you own it.

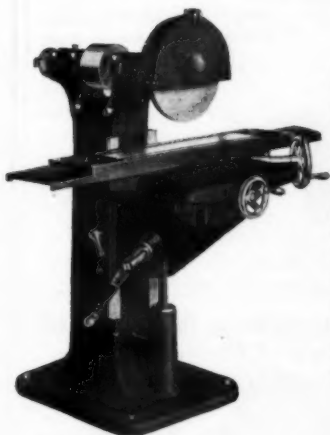
Expertly designed—exceptionally well built—simple—economical and dependable. Installed just where you want it, without expense of foundation, belts, shafting or motors.

Readily moved right to the job inside or outside.

**Write for Bulletin 10H.**



**A Large, Accurate, Rigid**  
**Plain and Surface Grinder**  
**For Shop and Tool Room**



**LA SALLE No. 3**

Grinding wheels.....	12" x 1"
Between wheels.....	25"
Table working surface.....	7" x 24"
Longitudinal movement.....	24"
Traverse movement.....	8"
Vertical travel.....	10"
Height to center of spindle.....	42"
Spindle speed.....	1400 r. p. m.
C. S. speed.....	700 r. p. m.
Floor space.....	63" x 46"
Weight, without c. s.....	800 lbs.
Weight countershaft.....	50 lbs.

Our constant aim is to make this modern grinder mechanically perfect, and we have the best equipment and the skilled workmen to do it with. It is a grinder you will like to work with, for its output, accuracy and handiness.

We are the manufacturers of the LaSalle Plain and Surface Grinding Machines and the American Drill Grinders. Catalogs and all desired information will be gladly furnished upon request.

**LA SALLE TOOL COMPANY**

**La Salle, Ill., U. S. A.**



# **"Reconstruction"**

The greatest problem of the American manufacturer today is to so increase his output and reduce his production cost that he is thereby enabled to keep his plant fully at work, regardless of external conditions.



solve this problem wherever rapid machining or reaming is required.

Let us tell you about  
**McCrosky Wizard Chucks and Collets**  
*for the drill press*

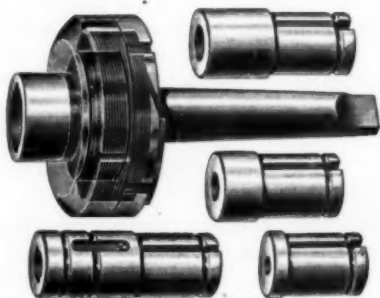
McCrosky Turrets  
*for your old engine lathes*

McCrosky Adjustable Reamers  
*for every reamer operation.*

*Fully described in Catalog No. 6*  
*"A text book on modern machine-shop methods"*

**McCrosky Tool Corporation**  
Meadville, Pennsylvania, U. S. A.

## **"Safety" Drill and Tap Holder Gives Universal Satisfaction**



**The Four Sizes Cover 0 to 2½-in. Diameter**

*They satisfy* users everywhere because there is nothing about them to break or get out of order. They are of simple design and excellent construction, assuring top-notch efficiency and accuracy.

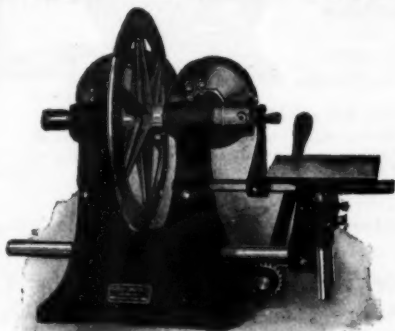
*Tap breakage* is prevented because the "Safety" is friction driven, which causes spindle to revolve in case of any undue strain. It permits tapping to the bottom.

*The change* from drill to tap, and vice versa, is made without stopping the spindle. All "lost motion" is practically eliminated.

*It satisfies in every way, saving tools, time, labor and money. We solicit a trial order for use on your most difficult work*

**The Beaman & Smith Co.**  
Providence, Rhode Island

## Rickert-Shafer Machines Do Fast, Economical Tapping



The illustration shows our  $\frac{3}{8}$ " Horizontal Bench Tapping Machine, which we also make in 3-16" and 5-16" sizes, bench or floor type. Can be direct connected to motor.

Our machines are of excellent design and embody expert workmanship. They are all friction driven, which insures a smooth running chuck, spindle, and practically eliminates all tap breakage. Maximum production is achieved with ordinary labor or a handy boy.

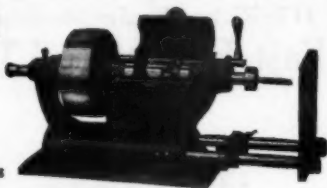
Our Verticals are made in two sizes,  $\frac{1}{4}$ " and  $\frac{1}{2}$ ". The Radial has capacity for  $\frac{1}{4}$ " and  $\frac{1}{2}$ " in steel, and is a favorite with manufactures of auto and machine tool parts. Its rigidity insures accuracy.

*It will pay you to write for our Tapping Machine Bulletin*

**Rickert-Shafer Co., 1110 Cherry St., Erie, Pa.**

## Workwell Tapping Machine

**Built for Service  
Has Many Fine Points**



2 bar slide to hold work straight with tap.

Steel gears 2" diameter, enclosed and running in oil.

Extra large hardened clutch. One loose pulley with hardened clutch. Non-slip tap holders. Die holder for threading outside threads. Stop adjustment for any depth of thread.

**MADE IN TWO SIZES.**

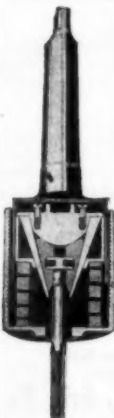
Type B 2 for threads to  $\frac{1}{4}$ " diameter Type C 2 for threads to  $\frac{1}{2}$ " diameter

**Give it a trial. Manufactured by**

**Workwell Engineering & Mfg. Co.**

Dept. 2

616-620 W. Monroe St., Chicago, Ill.



## You Need Not Break Taps

The most difficult work—including tapping tough metals, blind tapping, and bottom tapping in shallow holes, where a stop on a machine is useless—can be done in absolute safety to taps by using a

### Woodstock Improved Safety Tapping Chuck

It automatically releases tap the minute it binds or strikes bottom. Tap breakage is thus positively eliminated, saving material, time and money. Uses standard taps. Made in five sizes.

*Glad to send one on trial*

**Peter Bros. Mfg. Co.**

115 Railroad St.,

Algonquin, Ill.

# "Wear-Ever" Tap Chuck



**Holds Tap and Drives  
It True Regardless of  
Variation in Shanks**

An especially important point, since about 90% of all broken taps are the result of taps not running true, and since the methods commonly used to drive taps do not take into account the variation in shank size or size of square.

"Wear-Ever" chucks have no inconvenient and inadequate screw arrangements for truing up taps. They are *"always on the job."* No time is lost setting it for various sizes.

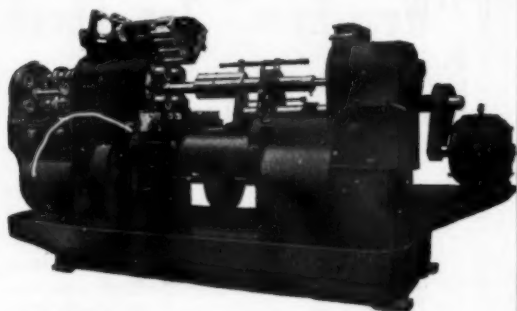
They are made of one-piece, special steel, heat treated, hardened and ground. They have a positive drive, entirely eliminating twisting off of tangs.

*You'll be interested in the price. May we post you?*

**Scully-Jones & Company**

Suite 555 Railway Exchange Bldg.,

Chicago, Ill.



THE

## **3 $\frac{3}{4}$ " ACME MULTIP**

**Ready for Delivery**

Due to our increased facilities for rapid assembly, the new size ACME AUTOMATIC, handling work up to

**3 $\frac{3}{4}$ " Diameter—12" Long  
is now ready for prompt delivery**

The large number of these machines in operation is tangible evidence of their success as producers of *large* duplicate parts from *bar* stock.



# SPINDLE

## With Distinctive Features

The booklet illustrated above will describe to you the distinctive features of this unusual capacity AUTOMATIC.

*May we send YOU a copy today?*

## THE NATIONAL ACME COMPANY

NEW ENGLAND PLANT  
WINDSOR, VT.

Cleveland, Ohio

CANADIAN SCREW PLANT  
MONTREAL, P. Q.

### Branch Offices:

New York   Boston   Chicago   Detroit   Atlanta   San Francisco  
Warehouses—New York, Chicago   With Foreign Representatives

## Reduce Production Cost 75%

### Peter Bros. Abrasive Metal Cutter Saves Material and Time

It will enable your men to do work *easier, better, quicker, and 75% cheaper*. Loss by nicking and breaking is done away with—it makes a *smooth, decisive cut through anything*. Often pays for itself within a month.

**8" Size \$22.50, with C. S.**

Splendid for tool room. Cuts high-speed steel up to  $\frac{1}{2}$ " square.

**12" Size \$60, with C. S.**

Cuts up to  $\frac{3}{4}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

**15 Days' Free Trial**

Write us or ask your dealer

**PETER BROTHERS MFG. CO.**

115 Railroad St., Algonquin, Ill.



## AUTOMATIC HIGH SPEED SAW

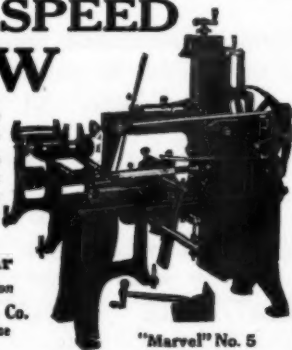
Attention is invited to the "Marvel" No. 5. Cuts duplicate pieces faster and at less cost than any other method. Entirely automatic.

**Feeds the Bar**

Write for full information

**Armstrong-Blum Mfg. Co.**

341 N. Francisco Avenue  
Chicago, Ill.

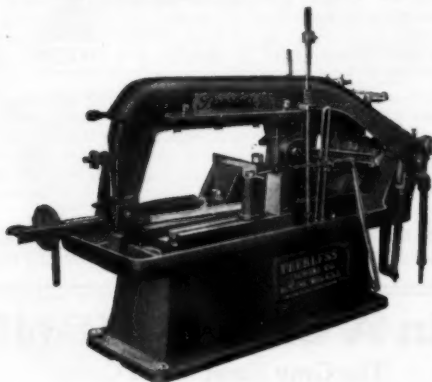


"Marvel" No. 5

Would you like to have us prove that

**Peerless** **HIGH  
SPEED**

Machines do 50 to 100% more work?



The Peerless has established a new standard of production in so many plants that we are ready to ship one at our expense and risk, if you agree to give it a thorough test. A trial like this often results in our selling from 1 to 10 machines.

### **The Balanced Lift of the Peerless**

automatically raises the blade for the return stroke. This greatly prolongs the life of the blades, economizes power, and increases production. There are more good features which we shall be glad to acquaint you with.

*The Peerless assures you the peak of production  
at very lowest cost. Write for full details.*

**Peerless Machine Company**

1609 Racine Street,

RACINE, WISCONSIN

## Are You Buying Cuts or "Just Hack Saw Blades"

If you are just buying blades, of course any kind will do. But if you are buying cuts you will be particular to specify

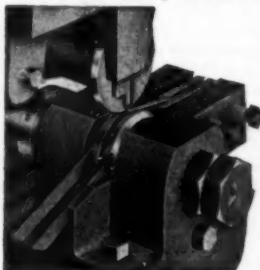
TUNGSTEN STEEL  
**Liberty HACK SAW BLADES**

because they represent the greatest possible number of cuts per blade. This is because they are made from the highest grade tungsten alloy hack saw steel and are properly tempered. When you buy a box of Liberty blades you are buying a known quantity—no guess work—everyone is a good one. Next time buy Liberty.

**Sterling Products Co., Inc.**  
 549 Washington Blvd., Chicago, Ill.

## In A Class By Itself

### The Gray Sheet Metal Cutter



Cutter and Feed Rolls

NOT a rotary shear—an entirely new method of cutting sheets and plates into any conceivable shape, doing away with much expensive hand-work. Has an unlimited scope of work, on which any kind of shear would be useless. It saves material, since it takes out a kerf, and leaves every portion of the material in perfect alignment.

Respective capacities of Nos. 0, 1, 2 and 3:

18" throat,	1/8" plate
34" "	3/16" "
36" "	3/8" "
36" "	5/8" "

Why not investigate further?

**W. J. SAVAGE CO.,** **Knoxville, Tenn.**

## Essential Economy



## The "Racine"

### High Speed Metal Cutting Machine

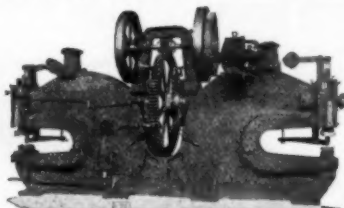
is in operation in all plants where economy of operation is carefully investigated.

It saves blades, saves material, saves time and labor. 30 different types.

*Catalog "H" will be sent on request*

**Racine Tool & Machine Co.**  
Racine, Wisconsin, U. S. A.

## L. & A. Double Punch and Shear



**42-Inch  
Throats  
Motor  
Driven**

The electric clutch control is a great convenience in connection with our floating punch. When working on wide sheets operator can stand away from the machine and throw in the clutch by merely pushing a button. Electric control furnished on other machines on order. Our 300-page Catalog shows our complete "Quality Line."

## The Long & Allstatter Company

AMERICAN PUNCH AND SHEAR WORKS  
Hamilton, Ohio

## "QUICKWORK"

REGISTERED U. S. PATENT OFFICE

## Rotary Shears

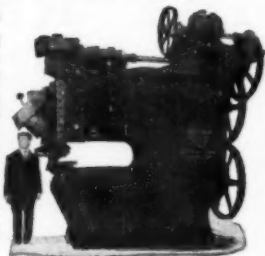
### Made in 6 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

**Save 50 to 90%**

Eliminates Oxyacetylene cutting and plate planing

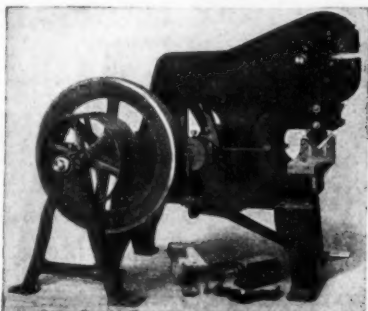
**Write for catalogue**



Patented June 3rd, 1913

**THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.**

**Punches—Shears—Bending Rolls**  
**The Beloit**  
**Combined Power Punch And Shear**



**Built in six sizes. Nos. 51, 52, 53, 54, 55 and 56**

**Direct connected motor or belt drive**

This is the best all around punch and shear in a combined machine of moderate cost. It is heavy and substantial, and amply back geared to require the minimum amount of power; is strong, compact, and easy to operate. Can be equipped with angle shearing attachment, architectural jaw, or for special work.

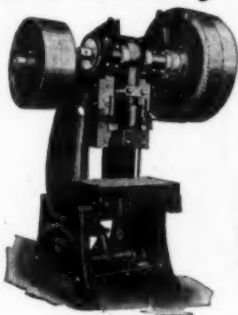
We are putting out a complete line of punching and shearing machinery in both power and hand tools, also light and heavy duty bending rolls.

We do not overrate the capacities of our machines.

*Write for catalogue and prices*

**Hendley & Whittemore Co.**  
**100 S. State St., Beloit, Wis.**

## L-J Heavy Duty Press



For a quarter of a century we have been building and perfecting these presses. Big production and economy of labor is assured. We invite your correspondence.

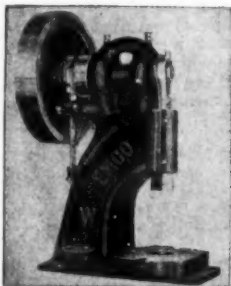
### Our Dealers

Stocker-Rumely-Wachs Co., Chicago  
W. J. Baird Machinery Co., Detroit  
Herberts Machinery & Supply Co.,  
Los Angeles and San Francisco, Cal.  
J. L. Lucas & Son Inc., Bridgeport, Conn.  
Brown-McDonald Mch. Co., St. Louis  
Northern Machinery Co., Minneapolis  
Clark Machinery Co., Cleveland, Ohio  
Patterson Tool & Sup'y Co., Dayton, O.  
Dale-Brewster Mch. Co., New York  
Swind Machinery Co., Philadelphia, Pa.

*Write to the nearest, or*

**Loshbough-Jordan Tool & Mche. Co.**  
Elkhart, Indiana

## Emco Bench Press



Weight, lbs.,----130

Stroke,--- $\frac{3}{4}$ " or  $1\frac{1}{4}$ "

Capacity,-- $\frac{3}{4}$ "x1-16"

**For rapid production on  
Small Parts**

Used in quantities by many  
large operators.

Specials—Iron Stand, Die  
Block, Inclining Blocks, Mo-  
tor, Counter.

Absolute non-repeat stop  
on one stroke.

Made absolutely accurate for  
die and other fine work.

EMCO "W" Bench Pwr. Punch Press

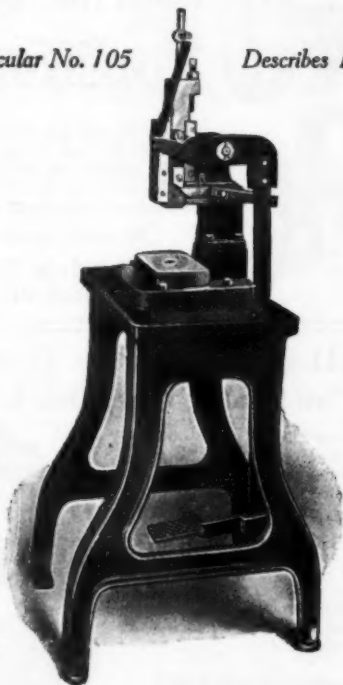
**The Enterprise Machinery Co.,** 28 S. Clinton St.  
CHICAGO, ILL.

# Spring Foot Press No. 105

Uniformity of Blow    Vibrationless    Non-Fatiguing

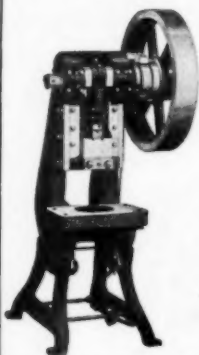
*Circular No. 105*

*Describes It*



**The Taylor & Fenn Company**  
Hartford, Conn.

## Here Is A Press



With Plenty of Steam  
Back of THE PUNCH

HIGH DUTY  
**ROCKFORD**  
PUNCH PRESSES

Made in straight side and  
inclinable types. Their great  
power backed by rigid design  
enable them to do the work  
you demand and stand up to it.

*Write For Catalog*

**Rockford Iron Works**  
Rockford, Ill.

## Willard Power Press Inclinable Open Back

For any kind of blank cutting,  
punching, perforating, forming  
or bending of sheet metal, you  
can find nothing quite so sat-  
isfactory as a "Willard."

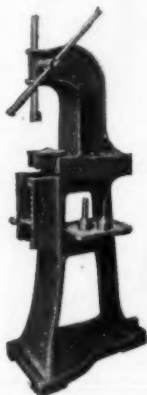
Our long experience with  
punch presses enables us to  
design it right, and we have  
the plant and the organization  
to build it right. You can't beat  
it anywhere.

*Description and price?*



**The Willard Press & Tool Co.**  
Cincinnati, Ohio

Nicholson Products are Guaranteed Products



Nicholson Arbor Press No. 3 with stand and drivers.

Note adjustable shelf for any length arbor or press.

Capable of exerting a pressure of 6,750 lbs.

### **The Arbor Press That Does the Work Quicker and Better**

The elimination of lost motion is the secret of factory production. Doing the work quicker and better means greater output and decreased overhead costs.

## **Nicholson Arbor Press**

**"Knocks it out in a Jiffy"**

Not only does the "Nicholson" save workmen's time, but it saves many bushings, shafts, pinions, arbors, etc., that would otherwise be destroyed by use of a sledge.

The "Nicholson" is constructed of highest grade materials. It is designed to withstand years of service and is the last word in arbor presses of real service.

A Nicholson Arbor Press will be installed in your plant for 30 days' trial. Unless it proves an investment to you, return it at our expense.

**W. H. Nicholson & Co.**

117 Oregon St., Wilkes-Barre, Pa.



No. 24 Press

## Efficient Equipment Atlas Presses

for building and repairing automobiles and general machine shop operations requiring pressure up to 25 tons and centering capacity up to 36 inches.

For driving mandrels; bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an Atlas Press. All sizes for all purposes. *It will pay you to investigate.*

**Atlas Press Co.**

317 N. Park Street,  
Kalamazoo, Mich., U. S. A.

## Partridge Light Punch Press

For making novelties from sheet metal, including such operations as stamping, blanking, piercing, bending, forming, perforating, embossing, shearing and wire cutting. Has exceptional strength for its size.

Carefully adjusted to secure accurate working of the dies, and to prevent shearing. Pendulum action of lever gives a stroke of maximum power without tiring operator. Workmanship and material the best.

*Write me for the interesting price*

**E. O. PARTRIDGE, 2041-2049 CHICAGO**

Also Bench, Column & Cabinet Grinders, Polishing Lathes, Light Punch Presses, Hollow Mills, Countershafts, Chuck Arbors and Saw Mandrels





# Essential Equipment



TODAY, after twenty-eight years of development and improvement, of ever-increasing usefulness in big plants and small repair shops, the dependable

## Greenerd Arbor Presses

are universally acknowledged and installed as **essential equipment.** The number used to help win the war ran into the thousands—our record of sales in 1917 is one of which we shall always be proud.

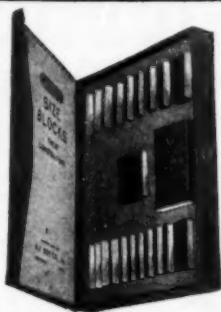
Now, whether you wish to drive arbors, crank pins or bushings; to broach, punch, bend with dies, straighten auto axles, etc., we have them for these and hundreds of other purposes, with pressures ranging from

**15 Pounds to 40 Tons**

*Our Catalog goes into details. Send for your copy and get acquainted with these modern, essential tools.*

**EDWIN E. BARTLETT, Nashua, N. H.**





# LOWAY

## Size Blocks

Just the thing you have been looking for to aid in laying out work on the bench, setting it up on the machine, inspecting, checking, etc. Made from carefully selected materials. They have such a broad field of use and are so inexpensive that all machine shops should carry these sets in their tool cribs to be checked out freely to workmen.

*Write us for full information*

**A. F. WAY CO., Inc., Hartford, Conn.**

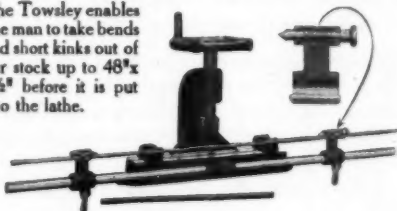
Export Department, 77 Broad St., New York City

*Makers of "LOWAY" Sine Bar and Sine Square*

## Straightens Bar Stock

**Also repairs bent journals, shafting, axles, etc.**

The Towsley enables one man to take bends and short kinks out of bar stock up to 48"x 2½" before it is put into the lathe.



Special shaped wood or metal blocks take care of such work as pressing and straightening tubing, channels, angles, tee irons, auto axles, etc. It gives big service at small cost.

**JOHN T. TOWSLEY MFG. CO.,** 1037 Woodrow St., CINCINNATI, OHIO

# Lourie Hydraulic Arbor Presses

Are made in many styles and sizes



**Type IX**

**For a hand press this IX Press has great capacity and is adapted for a wide range of work.**

Made in standard sizes 30, 50 and 75 tons.

Made in standard sizes 40" between uprights.

Made in standard sizes 24" between platens.

Made in standard sizes with 6" ram stroke.

Made in standard sizes with 4" and 6" spacing blocks.

Made in standard sizes with single piston pump.

**Lourie Mfg. Co.,      Springfield, Ill.**

## Abbott Steel Bearing Balls

High Grade—Highly Finished



We shall be glad to have your inquiries and make estimates

**The Abbott Ball Company**

Elmwood District, Hartford, Conn.



## Draw-in and Thrust Chucks

for Tool Room Lathes and Screw Machines.  
Look for the name "Hardinge Brothers"  
and write us. And did you ever ask us  
to make those—

### Screw Machine Collets

with regular or irregular holes? We are  
prepared to make good deliveries. Why  
not try us next time? Quantities never too  
small or too large to interest us.

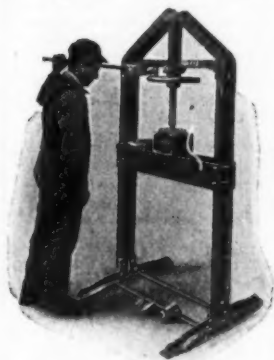
*When making inquiry, kindly refer to "Chuck Department"*

**Hardinge Brothers, Inc.**

Chicago, Ill.

# WEAVER

## 20-Ton Press



A  
Forcing Press  
Operated by  
Man Power  
That Will  
Meet Your  
Demands Up  
To 20-Tons  
Pressure

### One Man = 20-Tons Pressure With a Weaver 20-Ton Press

The WEAVER 20-TON PRESS, while designed particularly for the Garage, is meeting equally as large a demand from Machine Shops, Electric Shops and Factories, because of its extraordinary capacity and enormous power.

#### Construction:—

The frame is of ONE PIECE 5-inch, 9 pound channel steel, 32" wide between uprights, rigidly braced by a solid truss construction at the top, without bolted or riveted corners, or connections to weaken it. The screw does not revolve and is equipped with a "QUICK RELEASE" mechanism, that instantly releases the pressure when operated.

*For complete description write for Catalog  
List price F. O. B. Springfield, Ill., \$85.00*

Special presses of extra width can be furnished at a nominal charge

**Weaver Manufacturing Co.**

2179 So. 9th Street,

Springfield, Illinois

## Absolutely Uniform Riveting



### Done Economically and Noiselessly

The Grant Rotary Rivet Spinner always heads rivets with the same degree of tightness or looseness, easily adjustable at will.

*Economy* is secured through a 500% increase in output over hand riveting, and that with unskilled labor.

Our *noiseless, hammerless method* of riveting assures uniformity, economy, and a perfect finish.

*The Catalog shows several styles*

**The Grant Mfg. & Machine Co.**  
C. E. Station, Bridgeport, Conn.



## What a Satisfaction to test tapers accurately in double quick time

The most minute inaccuracy in a taper can be instantly discovered by using a

### Hartford Taper Gage

Merely stand before a window with it and see if your tapers are perfect or how they can be made so. It is adjustable over wide range, from No. 0 to No. 14 B. & S. taper.

This gage costs so little originally, it saves so much time, it insures such accuracy that no progressive machine shop should be without one or more. One firm bought one and then bought 32 more.

*Can you afford to lose this opportunity? Write now.*

**Hartford Special Machinery Co.**  
285 Homestead Ave., Hartford, Conn.

# Riveting Revolutionized

"The Hammer with the human stroke"

**Heads Rivets Cold**



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, sizes 7-16 to 5-8 in.

## **Built in Eight Sizes**

To handle rivets from the smallest, up to  $1\frac{1}{2}$ " in diameter. Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

*Send for the High Speed Hammer Book*

Department 13

**The High Speed Hammer Co., Inc.**

Rochester, New York

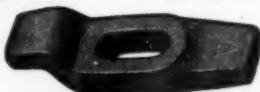


## Armstrong Clamps and Dogs Drop Forged Steel

All Shapes  
All Sizes

Best Quality—Alloy Steel  
Screws

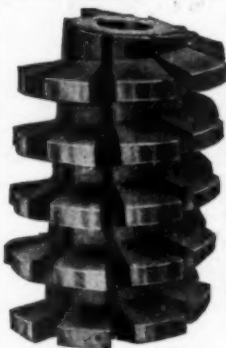
Complete Catalog Free



**Armstrong Bros. Tool Co.**

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.



## Quality Tools

comprising

**Form Milling Cutters  
Hobs and Special Too's**

We have built into these tools the highest quality of material and workmanship. The resultant tools entirely justify the great care taken in their manufacture. A superficial observation does not fully reveal their superior character, but when they are put to the test of performance their quality is shown in larger and better production.

*The way to find out is  
to put them to the test*

**Michigan Tool Company**

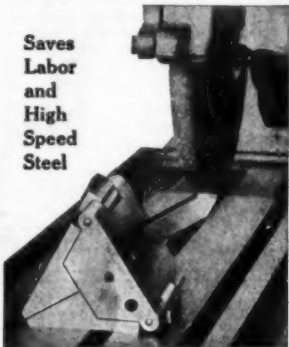
Detroit, Mich., U. S. A.

# **The Boss Jig**

## **For Holding Thread Cutting Tools**

**While grinding 29 degrees acme, or 60 degrees  
U. S. standard, or any degree between 29 and 60**

**Saves  
Labor  
and  
High  
Speed  
Steel**



The slotted screw in center of face controls the various angles required by turning, which causes the hinged wings to move in and out.

Clearance on thread tool is automatically provided for as the hinged wings are offset the correct degree to produce clearance.

Has containers for 3/8" and 5/16" tools; also furnished in special sizes.

The thread tool is accurately ground on both sides and top without removing from the jig.

**Retail price \$15.00, delivered anywhere in the United States.  
We shall be glad to quote terms to jobbers upon request.**



***The biggest little tool made; better order today***

**G-L Sales Company**

**Sole Distributors**

**521-523 W. 26th St., New York City**

## Anderson Improved Accurate Balancing Ways Easy To Manipulate



It is no wonder that they are easy to handle, for they never have to be adjusted—they are always ready for use. They tell instantly whether anything that runs on a shaft is in balance or not.

The rotation discs, made of chilled iron, are ground true on face and perfectly balanced. They run in specially designed bearings and are extremely sensitive.

*Sizes for all requirements. Send for specifications.*

**Anderson Bros. Mfg. Co.**  
115 Morgan St., Rockford, Ill.



## A Lot of Punch In the T. H. Ls.

When it comes to doing punch work, Jack Dempsey cannot compare with a T. H. L. in effectiveness and endurance.

### T. H. L. Punches

are correct in every point. They are uniformly constructed of the best material and insure a steady maximum production of first class work.

Prompt shipment of all regular sizes; specials on short notice.

*Try us out; you'll come again*

**T. H. Lewthwaite Machine Co.**  
415 East 31st St., New York City

**George A. Lewthwaite**

**Time  
Tested**

## **Punches and Dies**



Used by ship builders, boiler makers, iron workers, metal bed manufacturers, sheet iron workers, metal lathers, and concrete construction workers, they have always made good. They are tools you can bank on. If you want that kind, put it up to us.

## **Lewthwaite Shear and Rod Cutter**

This handy tool is compact, convenient and easy to operate. You will find it just tight for many jobs in your shop, for it has power to do easily shearing and cutting even beyond its rated capacity. It will earn its cost in a comparatively short time.

*Also*

**Pipe Benders  
Bar Benders  
Power Presses  
Foot Presses  
Etc., Etc.**



*Get our Catalog of Iron-Workers' Tools for handy reference*

**George A. Lewthwaite Co.**

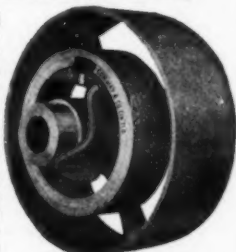
**116 Walker St., - - New York**

# Conway Friction Clutches

## Clutches of Maximum Efficiency

The Conway Machine Tool Clutch, while especially designed for lathes, shapers, millers, drilling machines, etc., is a superior clutch for many other types of machines.

A part of our service is to produce the right clutch for every machine requirement. If you have a clutch problem put it up to our engineers. We haven't been making clutches for twenty years without finding out something about them that will help you.

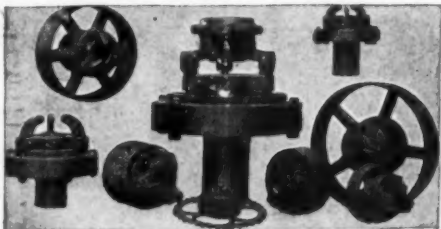


CMT Friction Clutch

*You should have our Catalog; write for it*

**CONWAY & COMPANY, Stock Yards P. O. Cincinnati, O.**

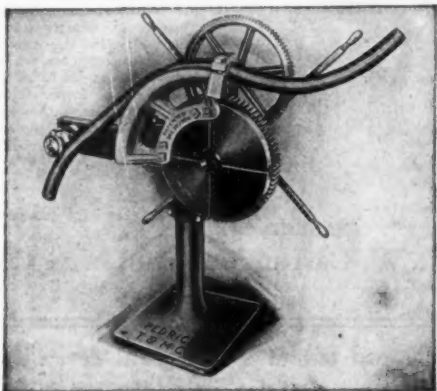
**Refer your clutch problems to us**  
**Solving them is our business**



*Special Clutches — a specialty*  
*Catalogue cheerfully sent on request.*

**National Clutch Company**  
**1859 Fulton St., Chicago, Ill.**

## Our Pipe Benders Meet The Demand



Ever since their invention our hand Pipe Benders have had a steady sale and have given universal satisfaction.

Recently, we have made some improved attachments that permit of a wider range of work and open up a new field in the kind of bending the machine will accomplish.

If you do pipe bending you will find our machine an economical, simple and very efficient appliance in reducing costs and doing better work. For 2" and under.

*We have a Bulletin waiting for you. Send for it now.*

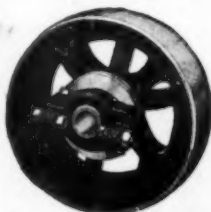
**Pedrick Tool & Machine Co.**

**3644 N. Lawrence St., Philadelphia, Pa.**

Manufacturers of Cylinder Boring Bars, Portable Millers, Crank  
Pin Turning Machines, etc.

## Carroll Countershaft Clutches

Are guaranteed against repairs



Self-oiling—double adjustment—  
double gripping power.

We make no pretensions for our clutches that cannot be justified by their record. When you thoroughly understand the essential features of our clutches, we believe you cannot fail to be impressed in their favor. A fair comparison of our clutches with other makes is earnestly desired.

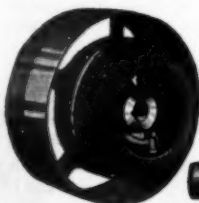
May we have the pleasure of sending full details?

We Furnish Complete Countershafts

**L. W. Carroll Manufacturing Co.**

Batavia, Ohio

The real test of a mechanical device is  
long usage under every possible condition



Enclosed Type, Self-Oiling

### The Edgemont Friction Clutch

Has been used satisfactorily for years by leading machine builders, who have adopted the Edgemont as their standard—names will be given upon request.



This clutch, designed to stand both use and abuse in heavy, rough work, has stood the test, and is giving satisfaction to thousands.

Write for Catalog of "The Clutch that's stood the test"

**The Edgemont Machine Co.**

Dayton, Ohio

Special Clutches and Transmission Machinery for all purposes.

# The Universal Angle Plate

Has Made Good Everywhere



Protected  
by Patents

By using this handy and accurate accessory on your plain grinding or milling machines, they become practically universal. Can be used to good advantage on any type of machine tool, and is equally valuable for the toolmaker, die sinker and repair man. It moves through 360° horizontally and 90° vertically; has a vernier attachment reading to 5' for especially accurate work. The following partial list shows the number of "Universals" in use by each plant, and indicates

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Bremerton Navy Yard, U. S. N.....	9	Norfolk Navy Yard, U. S. N.....	9
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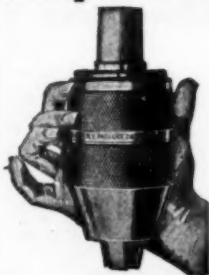
*Write for the Folder—you'll be glad you did*

**Boston Scale & Machine Co.**

100 Ruggles St.,

Roxbury, Mass.

# Eclipse Self - Tightening Drill Chuck



Roller bearing.

Quickest and easiest grip, and it never slips.

Self-tightening. No keys or wrenches.

It has no rival in its combination of quick and firm gripping, easy release, simplicity and accuracy.

Saves time and money on high speed drills.

*You need it now. Why wait?*

**Nielsen-Barton Chuck Co.,** 106 S. Jefferson St. CHICAGO, ILL.

Also makers of ARBORS for all kinds of Chucks

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## for INSTANTANEOUS CHUCKING

**I**NSTANTANEOUS chucking makes you realize how much valuable time has heretofore been wasted in wrenching and adjusting.

The *Barker Wrenchless Chuck* increases lathe production from 30 to 150 per cent, as testified by hundreds of nationally known shops.

It operates instantaneously, whether revolving or still, and its grip is absolutely unequaled.

It is compact and durable,—a complete unit in itself.

Just pull the lever, and the piece is chucked.

*Send for particulars*

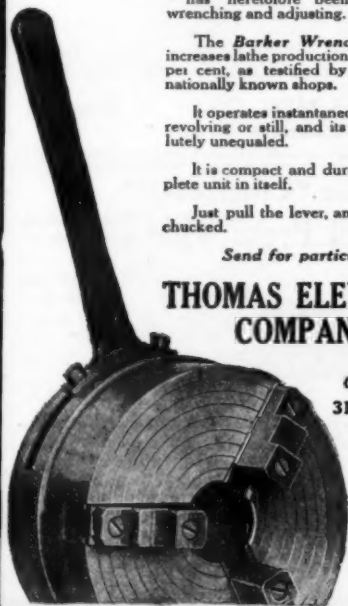
### THOMAS ELEVATOR COMPANY

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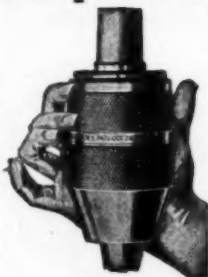
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# Eclipse Self - Tightening Drill Chuck



Roller bearing.

Quickest and easiest grip, and it never slips.

Self-tightening. No keys or wrenches.

It has no rival in its combination of quick and firm gripping, easy release, simplicity and accuracy.

Saves time and money on high speed drills.

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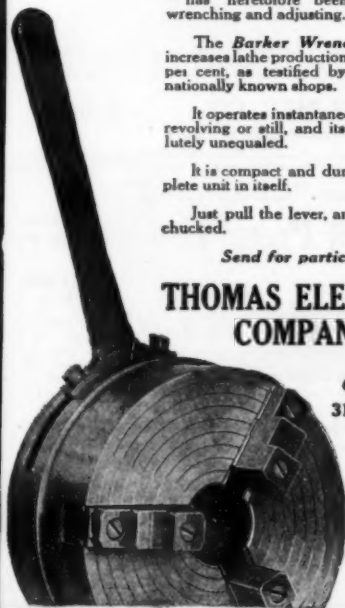
Just pull the lever, and the piece is chucked.

*Send for particulars*

**THOMAS ELEVATOR  
COMPANY**

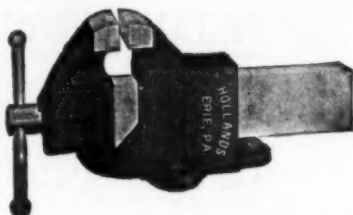
**CHUCK DIVISION**  
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N. Y.



## Vises for Severest Service

Hollands Made Good for 32 Years



We make all kinds, suitable for every purpose. Best of materials and workmanship. Send us a trial order.

**HOLLANDS MFG. CO.,**

**Erie, Pa.**

**Established 1887**

## The "Cincinnati"

**Quick  
Acting**

**Drill Press Vise**

**Three Sizes  
3½", 5" & 7"**



**Dimensions  
of No. 5**

Width of vise 5 "  
Vise opens 6 "  
Width of jaws 5 "  
Depth of jaws 1½ "  
Opening thru  
center of base 1½ "

**Guaranteed to be true in any of the three positions in which it is placed. To operate, shove sliding jaw up to the work and a turn of a screw—time, three seconds. Particularly adapted to drill press work.**

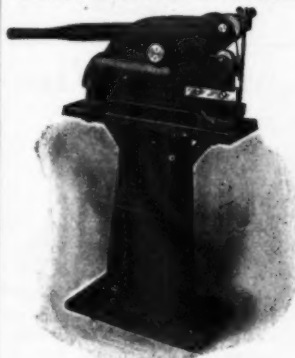
*It has other advantages; write for the description*

**Cincinnati Vise Company**

**Station H., Cincinnati, Ohio, U. S. A.**



Nos. 1, 2 and 5 Shears and Rod Cutter



Nos. 3 and 4 Shears

# Hercules Shears and Rod Cutters

No. 0—Shear (Tool Making Bench Machine) Fitted with Bushings to Cut	$\frac{1}{4}$ "	$\frac{3}{16}$ "	$\frac{1}{2}$ "	Iron Rod
	and under,	$\frac{1}{16}$ "	Flat Iron and under,	
No. 1—Shear Fitted with Bushings to Cut	$\frac{1}{4}$ "	$\frac{3}{16}$ "	$\frac{1}{2}$ "	Iron Rod and under,
No. 2—	"	"	"	"
No. 3—	"	"	"	"
No. 4—	"	"	"	"
No. 5—Plain Shear	$\frac{1}{4}$ "	$\frac{3}{16}$ "	$\frac{1}{2}$ "	Flat Iron and under only.
No. 6—	"	"	"	"
No. 7—	"	"	"	"
No. 8—	"	"	"	"
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No. 100—	"	"	"	"

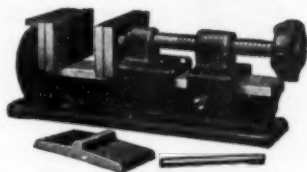
Shear blades have a draw-in cut with no tendency to crowd work out of shear. Pressure is directly over the cut by a rolling contact. Arm of movable blade is operated with a steel band. No springs on the machine.

Send for Shear Catalog

Manufactured and For Sale By

W. C. & F. C. TUCKER, Hartford, Conn., U. S. A.

## Gem Drill Vise



**Strong and Durable**  
**Quick in Action**  
**Powerful Grip**

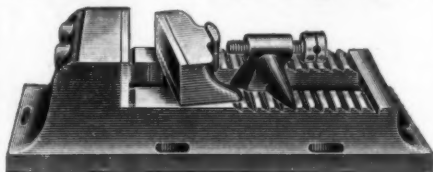
Made by

**J. E. Martin Tool & Die Co.**

548 West State Street,

Springfield, Ohio

## Massey Chucking Vise



The best chucking vise on the market. Saves hammering, squaring or setting. The sliding jaw is adjustable to all shapes; both steel jaws are beveled; when the work—either straight or taper—is chucked, these jaws force it down onto the bed of the vise and hold it securely. Jigs and clamps are eliminated. It chucks instantly. Write for circular.

**Massey Vise Company**

549 Washington Blvd.,

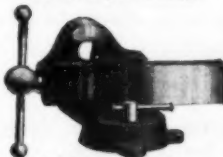
Chicago, Ill., U. S. A.

# YOST VISES

**For Every Machine Shop Purpose**



**Solid Jaw, Stationary**



**Solid Jaw, Swivel Base**

shops with every detail perfectly worked out and finished.

We are proud of our vises, because they help every bench man who uses one to do better work. You will be proud of them too, sometime, because their installation in your factory means better and more work every day for you.

They are vises of reputation, because they are vises of merit—because their nice adaptability to their work makes their use at once a pleasure and an economy.

Scientifically developed to give the greatest holding power, rigidity, ease of manipulation and all-around reliability. The designs are reproduced in our splendidly equipped



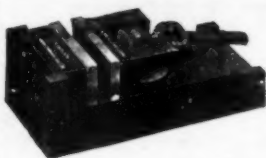
**Universal Double Swivel**



**Yost Drill Press Vise**

*Eventually, of course; but why not now?*

**Yost Manufacturing Co.**  
Meadville, Pa.



# Nestor Vise

## Here are its Features:

Work is gripped almost instantaneously—moves from maximum to minimum with quick action sliding jaw.

For size and weight an extraordinary gripping range is provided.

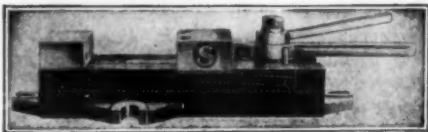
Hole can be drilled at right angles without taking work from vise.

Special provision makes it impossible for jaws to cock up. Immediate delivery.

*Write for particulars, sizes and prices*

**Nestor Manufacturing Co., Inc.**  
40 W. 13th St., New York City

## "Supreme" Quick Action Vise The Vise With the Bull-Dog Grip



Patented May 5, 1914

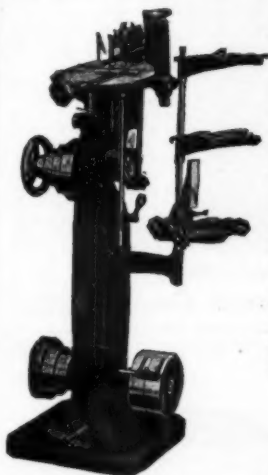
The T slot and bolt head are on an angle so that when the levers are tightened for work of any size it gives a wedging effect that make it impossible to force them back by clamping the work. Work is *drawn down* instead of being raised up in the vise.

It is simple and durable, there being no parts which can get out of order, and it has a larger range than others of its size.

*Write for literature describing its "10 Superior Features."*

**SPAFFORD TOOL WORKS, - Hartford, Conn.**  
Export Department, 77 Broad St., New York City

## Cochrane-Bly Machines Insure Accurate, Low-Cost Filing



No. 2 Filing Machine

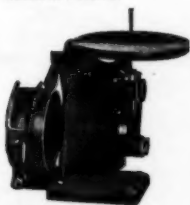
The Bench Filing Machine, shown on the right, is compact and convenient for light filing. Furnished with or without Upper File Support.

Accurate filing by hand is difficult for the expert; with the Cochrane-Bly No. 2 Filing Machine it is rapidly and perfectly accomplished at minimum cost.

Table is adjustable, also length of stroke, and there are four speeds.

The standard equipment includes arms for Hack Sawing and extension holders for Jig Saws.

This machine meets the most exacting tool room requirements where close finish is desired.



Bench Filing Machine

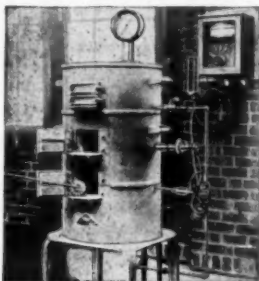
*Glad to mail you complete description*

## Cochrane-Bly Company

Rochester, N. Y., U. S. A.

Also Cold Saws and Automatic Cold Saw Sharpeners  
Universal Shapers for Die and Tool Work

## The "TRIAD" 3-in-1 Furnace Does Work Cheaper and Better



Consists of three compartments, for pre-heating, high-heating, and drawing the temper. It heats high speed steel to hardening temperature in 20 minutes and carbon steel in 10 minutes from a cold start.

It is obviously  $\frac{2}{3}$  cheaper to operate, using but one burner, for gas or oil, to heat the three sections, and the floor space occupied is only 2' square.

Besides this, its shape insures absolutely uniform heating. Pieces are also passed from one furnace to another through non-oxidizing atmosphere. Result—no pitting or scaling.

Write for Catalog No. 5

**The W. R. Bennett Co.,** P. O. Drawer X  
Elmwood, Conn.



## Hitchcock's List Goes to the Heart of 96% of the Best Plants in the Country

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.



## “Flint Shotting”

scale from hot-rolled or heat-treated stock before machining, not only quadruples (at least) the life of the roughing-tools, but it retains the life of cutting compounds which *pickling* kills.

Hereafter, in buying carbon steel or alloy steel stock specify and insist that it be sand-blast cleaned with *Flint Shot*—and *not* pickled.

Better still, install a sand blasting equipment in your own plant so you can “Flint Shot” *all* scaled stock before it goes to your lathes, drills, planers, die-presses, or other tools.

*Our Book “Little Journeys of the Flint Shot Man” will tell you more about this.*

**United States Silica Company**

1941 Peoples Gas Bldg.,

Chicago, Ill.

We have a complete line of  
**CASE HARDENING MATERIALS**

"Hi Carbon" Pack Compound.

"B-G Compound" for Cyanide Hardening.

"Enamelite" for obtaining soft areas.

**BOXES—POTS—OILS—BONE.**

Shore's Scleroscope

In Stock

Prompt Service

*Our complete catalog is waiting*

**Bell & Gossett Co.**

613 W. 30th St.,

Chicago

## **Case-Hardo**

### **The Modern Case Hardening Compound**

In using Case-Hardo you do not experiment. Four years of use on various products in all parts of the country has demonstrated its unquestionable reliability and great economy.

#### **You Will Find**

- that it hardens quicker, cleaner and deeper than other agents.
- that it does away with poisonous fumes; the operator can work in safety.
- that it is used as other agents, but at much lower heat.

*Full information and prices on request*

**Made Only By**

**The Thos. Buchanan Company**

29 W. 3rd St.,

Cincinnati, Ohio

Established in 1886



# Carbonizes All Steels

## Economically and Safely

To use "Ferro Case" once means you will say good-by to cyanide forever. The reason? Greater safety and economy, and a better, cleaner case. It carbonizes at a lower temperature, thereby avoiding coarse crystalization, blistering, warping and wear of furnace linings and crucibles.

### A Non-Poisonous Compound

scientifically prepared, which does not lose its effectiveness with age or chemical action, and can therefore be stocked without danger of spoiling.

Ferro Case M is for use in the cyanide melting furnace, and is handled the same way.

Ferro Case S is for sprinkling on hot steel. In either case you get better results in absolute safety.

*We solicit a trial order from you  
Kindly specify the grade wanted*

**C. G. Buchanan Chemical Co.**

Sta. H., Cincinnati, Ohio, U. S. A.



# Blueprints

## The Wickes

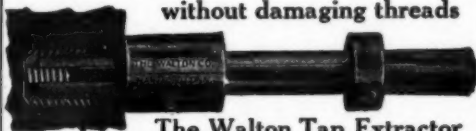
Continuous Electric.  
Sells at half the  
price. Uses half  
the current  
of others.  
Perfect prints  
up to 48" in  
width and of  
unlimited  
length.

Dept. H

Wickes Bros., Water Street,  
Saginaw, Mich.

# Remove Broken Taps Quickly

without damaging threads

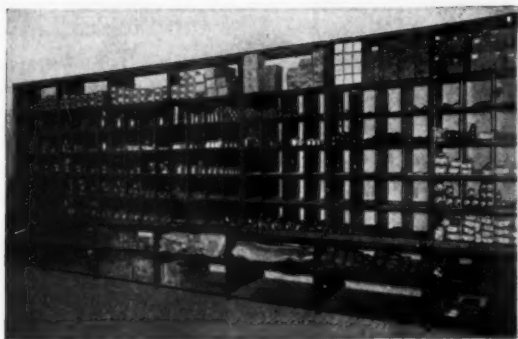


## The Walton Tap Extractor

This simple, inexpensive device enables the mechanic quickly to remove practically every tap which breaks at or below the surface. It is so easy to manipulate and so efficient that it obviates bruising the threads. The time and material saved often pay for the tool in one operation. Made in sizes from No. 8 to 1 1/4".

*Folder—or 60 days' free trial—on request*

**THE WALTON CO., Hartford, Conn.**



## It's Even Better Than It Looks

**The beauty of Terrell Steel Equipment is more than skin deep because it's lasting**

Steel shelving and bins look good when first put in, of course, but it also looks good many years after *because it stands the wear.*

The superb wearing qualities of steel equipment make it the most economical material to use. The slightly greater initial cost over wooden fixtures is returned to you many times over. You pay nothing for repairs, less for insurance, there's less fire risk, and you save floor space. You install lasting service and all-around satisfaction.

*We invite you to make inquiries. Our staff is always ready to give advice, make suggestions and submit plans, at no cost to you*

### **Terrell's Equipment Company**

Hall & Division Sts., Grand Rapids, Mich.



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



Style "L"



Style "T"

### GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

**GITS BROS. MFG. CO.**  
1940 SO. KILBOURN AVE., CHICAGO



Style "H"



**Handles  
From  
Steel**

**For power tools and similar purposes**

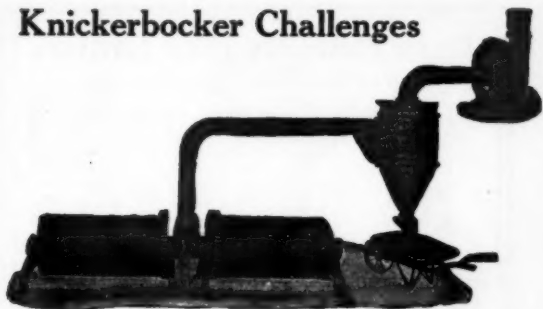
Accurate, highly finished, complete on receipt, ready to attach. Manufactured as a specialty, we offer you the result of quantity production, in quality and price. Estimates given on large screw machine work, handles and screws of any description.

*Write for price list and discounts*

**The Cincinnati Ball Crank Co.**  
Oakley, Cincinnati, Ohio



## Knickerbocker Challenges



## A Comparison With "Rarefied" Dust Collectors



He asks you to investigate our statement that the "Rarefied" does better work at less cost for power and upkeep.

No matter how difficult the dust—whether raised by sand blasts or tumbling barrels, emery or polishing wheels, whether it's extra cutting or extra fine—the "Rarefied" will do a satisfactory job for less money.

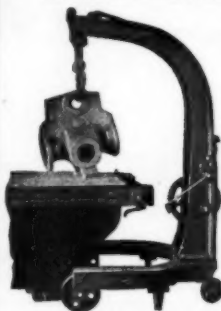
It operates on the "rarefied" or partial vacuum principle, hence there's no abrasion of fan parts, and very little wear from internal friction.

*Ask us to send you a list of users  
and a copy of our Booklet*

**The Knickerbocker Company**  
Jackson, Mich.

## Turn Minutes Into Dollars

With a Canton Portable Crane and Hoist



When there's a heavy job to lift, why take from 5 to 9 men from their work to assist? Why not let one man get the "C. C."—"The Handiest Tool in the Shop"—and do it quickly, with perfect ease and safety, and at a great saving to you.

Both big and little shops find the time and labor saved with this hoist is so far out of proportion to its cost that they actually lose money every day they operate without it.

*Ask for Booklet E-8 when you write.  
Your choice of many sizes.*

**CANTON FOUNDRY & MCHE. CO., Canton, O.**

## ELECTRIC EUCLID HOISTS

### Let OUR Engineers Save YOUR Time

It is possible that you realize the need of modern material handling equipment but cannot spare the time or men to work out the details.

Our engineers are constantly solving these difficulties and helping manufacturers reduce expenses.

Furthermore, this service is absolutely free.

Will you take advantage of it?

**The Euclid Crane & Hoist Co.**

Dept. C

EUCLID, OHIO, U. S. A.

# Redface Pulleys

Sheaves and Fly Wheels



**PERMANENT:** They are permanent, as they are not affected by age, heat, cold or moisture.

**RELIABLE:** They do not loosen up under vibration or intermittent loading.

**RUN TRUE:** They run true, steady the line shaft, and have a very small load due to windage.

**REDFACE PULLEYS** are especially adapted to use on motors, fans, pumps and special machinery.

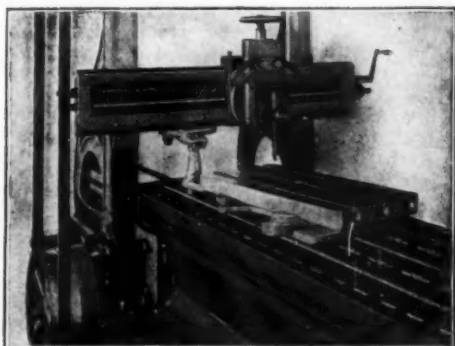
*Catalog mailed promptly upon request*

## Pyott Foundry Co.

Cast Iron Pulleys, Sheaves and Fly Wheels  
328 N. Sangamon St., Chicago, Ill.

# Planing Curves on Your Planer

Is easy with our Radius Planer Attachment



**H**ERE'S A SIMPLE DEVICE that does absolutely accurate work on all kinds of links, blocks and circular work, on any ordinary planer. It has no superior for planing curves of any radius, and perfectly parallel curves. If you so desire, we will furnish a scale for setting to any radii.

Our catalog tells about this and other time and money saving tools and attachments, including the following:

Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders; motors, etc.

*You'll find it interesting—write for a copy today*

**H. B. Underwood Corporation**

1015-25 Hamilton St., Philadelphia, Pa.

## Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

**Write directly to those offering the machines for sale for prices and full descriptions.** If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

### FOR SALE BY

**Fulton Tool Works,** - **Huntington, W. Va.**  
SHAPER.

One 16" Hendey friction shaper. Price, \$250. This is at our Huntington plant.

### WANTED BY

**Metal Ware, Care A. H. Hitchcock, 1235 Caxton Bldg., Chicago, Ill.**

#### TOGGLE DRAWING PRESSES.

We are in the market for one each 3½B, 3½C, 3½B, 5S and 14B Bliss Toggle Drawing Presses. What have you to offer? Kindly state in your reply price, age of press and where it may be seen.

### FOR SALE BY

**Brownell Machinery Co.,** - **11-13 Eddy St., Providence, R. I.**

Drill, 3½" Cincinnati-Bickford, radial.  
Drills, 1-spindle Allen, b. b.  
Drills, 2-spindle Allen, b. b.  
Drills, 3-spindle Allen, b. b.  
Drills, 4-spindle Allen, b. b.  
Drills, 16" Milbury  
Drills, 6" Newton radial.  
Gear cutter, No. 2-A Cincinnati.  
Gear cutter, No. 5 B. & S. 48".  
Grinder, No. 1 Landis universal.  
Grinder, No. 2 B. & S. universal.

Grinder, 10"x36 Landis plain.  
Grinder, 10"x72 B. & S.  
Grinder, 16"x48" Diamond disc.  
Lathe, 11"x5" Worcester.  
Lathe, 12"x5" Vernon, q. c. g.  
Lathe, 15"x10" Sidney, q. c. g.  
Lathe, 20"x14" Reed, q. c. g.  
Milling mche., No. 4 Van Norman.  
Milling machine, No. 25 Bilton.  
Milling machine, No. 1 B. & S. plain.  
Milling machine, No. 3 Cinti, plain.

### FOR SALE BY

**Frank H. Parker Company,** - **First Nat'l Bank Bldg., Chicago, Ill.**

Blower, 11½" No. 10 Buffalo, \$ 125.  
Drill press, 28" vert., s. h. b. g., 300.  
Hammer, 2,000 lb. Merrill  
board drop, 1,000.  
Mitre saw table, 200.  
Lathe, 16"x6" Flather, 250.  
Lathe, 18"x6" Barker, 350.  
Lathe, 20"x10" Cincinnati, q. c.  
g., new, 1,000.  
Lathe, 36"x14" Putnam, 800.  
Lathe, 36"x20" Putnam, 900.  
Lathe, 50"x14" New Haven, 1,500.  
Miller, No. 2 P. & W., Lincoln  
type, 225.

Miller, No. 2M Potter & J., \$ 1,200.  
Miller, No. 12 B. & S. plain, 550.  
Miller, No. 3 Cincinnati plain, 1,250.  
Planer, 36"x36"x14" Gray 2 hd., 3,000.  
Planer, 48"x48"x30" Putnam 2  
heads, 9,000.  
Planer, wood, 24" Invincible, 250.  
Planer, wood, 26" Bentel, 275.  
Press, No. 104 Consolidated, 700.  
Radial, 42" Dreses plain, 1,000.  
Shear, power, No. 10 Badger, 100.  
Slotter, 36" Niles, 5,000.  
Timber sizer, 30x24 Fay No. 32, 1,000.  
Triplex tackle, 6-ton Y. & T., 150.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Cyril J. Bath & Co.,**

**721 St. Clair Ave., N. E., Cleveland, O.**

Selections from Stock

#### AUTOMATICS.

23" and 43" Model A Cleveland, in very good condition, with large equipment. No. 33 New Britain auto. chucking machines, 5 stations and tapping spindle, handle work up to 2 1/2" diameter in chuck jaws and 5 1/4" swing outside chucks; very good. (3).

#### BAR STOCK MACHINES.

2-A Warner & Swasey 5 bar and chucking; very good, (5).

#### BORING MILLS.

30" Gisholt, single pulley drive, rapid traverse, 3-jaw chuck, good as new. 42" Niles vertical, one swivel, one turret head, 3-jaw table, fine condition, BULLDOZER.

No. 5 Ajax hi-speed, with steel bed and cut gears; first class condition.

#### DRILLING MACHINES.

20", 22 1/2", 24" and 28" Sibley, new. Also two 20" Sibley, second hand.

2-spindle 24" Barnes all geared drills, pump and piping; fine shape.

Sibley & Ware drill presses, (3).

22" Rockford drill press.

Large Colburn D-3 hi-speed drills; very good condition, (2).

#### GEAR CUTTER.

25" No. 3 Brown & Sharpe plain, with all parts, very good condition.

#### GRINDERS.

Cincinnati No. 1 old style cutter grinder, complete, good shape.

No. 2 Woods tool and cutter grinders; good as new, (4).

Wet and dry Yankee drill grinders.

No. 3 Landis universal grinder, takes 12"x42".

18" Bryant internal grinder, late model, excellent condition.

No. 60 Heald cylinder grinders, first class. (3).

#### HAMMERS.

No. 6-B Nazel air forging hammer, weighs 32,000 lbs., practically good as new. 100 lbs. Bradley, compact belt drive, with countershaft; good.

#### KEYSEATER.

No. 0 Baker, with 10" stroke; in good condition throughout.

#### LATHES.

16"x 8' Bradford compound rest engine lathe, quick change gears; good.

19"x 8' LeBlond, steady and follow rests, countershaft, etc.

18"x 8' Mueller engine lathes, q. c. g., dbl. bk. grd.; very good condition, (2).

20"x 8' Walcott engine lathes, quick change gear, countershaft, etc., (2).

34"x11' Johnson compound rest engine lathe very good condition, complete with standard equipment.

#### MILLING MACHINES.

Billings & Spencer die trimming impr. ved miller; first class condition.

No. 60 Brown & Sharpe plain hand miller.

No. 25 Becker plain horizontal miller; almost new.

No. 3-B heavy Brown & Sharpe hi-power; fine shape.

No. 4 Brown & Sharpe cone type with dividing hds., vert. att., etc., very good.

AB1 Becker hi-power vertical, fully equipped with oil pump and countershaft.

No. 3 Becker universal, with dividing heads, vise, countershaft, etc.

#### PLANERS.

22"x22"x 5' J. S. Wheeler, with one belt on each side, quick return to table, in first-class operating condition.

36"x36"x14' Pond single head, in good condition, table 6" thick, no broken T slots or pegged gears, a good rugged tool, fine condition.

#### PRESSES.

No. 76 1/2 Bliss tie rod frame press, 8" stroke, 27" between uprights, weighs 25,000 lbs; excellent condition.

No. 77 1/2 Bliss tie rod frame press, 10" stroke, 30" between housings, weighs 35,000 lbs; very fine condition.

No. 59 1/2 Toledo tie rod frame press, stroke 10", bed area 40x40, weighs 70,000 lbs.

No. 78 1/2 Bliss straight side tie rod frame, press stroke 20", distance bed to slide stroke down adj. up 20"; practically as good as new.

No. 78 1/2 Bliss straight side tie rod frame press, stroke 10", distance bed to slide stroke down adj. up 22"; practically as good as new.

Dries & Krump power brake 10'-1" long, 3/16" capacity, belt drive; nearly new.

## SECOND-HAND MACHINERY

Cyril J. Bath & Co., Continued.

### SAWS.

11½ Higley bolt cut-off saw, 14" blade; in good operating condition.  
Metal band saws, (2).  
Peerless hi-speed 6" saws; new, (3).

### SHAPER.

24" Juengst horizontal crank, worm gear drive; good condition.

### MISCELLANEOUS.

Return roller, No. 0 Ajax, very good.  
Screw machine, No. 2 Bardons & Oliver, with 13 collets, double friction countershaft; good.

## FOR SALE BY

J. L. Osgood, 45 Pearl St., Buffalo, N. Y.

Chuckling lathe, 21" Potter & Johnson, \$350.  
Screw machine, No. 5 Warner & Swasey, \$375.  
Shell cutting-off machine 14" Williams.  
Turret lathe, 12" Brown & Sharpe, \$200.

## FOR SALE BY

The Osborne & Sexton Machinery Co., Columbus, Ohio

### LATHES.

9" to 13" Barnes, h. s., cp. r., new.  
13-15-16 and 18 O. & S., h. s., c. r., new.  
16x8 Seneca Falls rel. att., q. c.  
18"x 8" Fitchburg, hol. spdl., cp. r.  
18"x 8" Monarch, q. c. taper  
19"x13" Gray, compound rest.  
20"x10" Hamilton, double back gear.  
21"x10" and 24"x12 South Bend.  
24"x12" New Haven, h. s., c. r.  
25"x24" Fifeild.

### TURRET LATHES AND SCREW MACHINES.

1" Garvin hand screw machine.  
1½" S. & K. hand screw mches., (3).  
1½" Tilted turret hand screw mche.  
No. 6 W. & S. screw machine.  
2x24 & 3x36 J. & L. dbl. equipment.  
4" Hartford single spindle auto.

### SHAPERS AND PLANERS.

14" Niles, traveling head.  
16, 18 & 24" Barker, back gear crank.  
16" Kelly crank, back geared.  
20" Walcott geared shaper.  
22"x22"x 6" Gray, 1 head.  
32"x32"x10" Niles, single head.  
36"x36"x16" Niles, double head.  
60"x60"x17" Betts, double head.

### PRESSES.

No. 1 Consolidated and Toledo, (10).  
No. 2 Sidney o. b. inclinable, 1600 lb.  
No. 32-P Toledo.  
Pneumatic, 20 ton, 37" bet. uprights.  
Perkins, dbl. crank, 16x24 bolster.  
Covington, 10' 6" between housing.

### DRILLS AND RADIALS.

Henry & Wright sgl. spdl., high spd.  
3½" Canedy-Outo plain, new.  
4" Haush plain, heavy pattern.  
4½" Universal, cone drive.  
Sensitive 1, 2 & 3 spindle.  
High speed sgl. spdl. Cleveland.  
20" Aurora, with tap. attachment.  
20", lever feed. (30)  
24", 26" and 28" sliding head.  
Quint 6-hole turret drill.

### MILLING MACHINES.

No. 12 Brown & Sharpe, (2).  
No. 1½ Valley City universal.  
No. 4 Cincinnati plain.  
No. 1½ American plain.  
No. 1½ Valley City plain, new.  
No. 3 Brainard, 30x7 table.

### GRINDERS

No. 3 W & M. wet surface.  
Landis 10x24 universal.  
Litter 10x20 universal.  
30x10 Webster & Perks, univ., new.  
Cutter, reamer and tool, new.  
Cincinnati cutter and tool.

### MISCELLANEOUS.

Balancing machine for pulleys.  
Band saws, metal, 30" Wright, (2).  
Boring mill, 12", 2 swivel heads.  
Compressor, 8"x8" H. & B. belt.  
Cut-off machine, 3" Davis.  
Dynamo, plating, 2500 amp., 8 volt.  
Hammer, 56 Williams White Justice.  
Motor, 75 h. p., 220 volt, 3 phase.  
Pipe machines, 4, 6 and 12".  
Punch & shear, No. 3A Royersford, double end.  
Straightening rolls, 57" for ½ plate.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.**

#### BORING MILLS.

48" Bullard, vert., 1 plain & 1 swivel hd. on cross rail, face plate jaws, used.  
37" Bullard, vertical, 2 swivel heads, 1 turret, 1 plain, used.

#### LATHES.

13"x 6" South Bend, c. r., h. s., new.	20"x 10" Walcott, q. c. g., d. b. g., c. r., h. s., new.
15"x 8" South Bend, c. r., h. s., new.	20"x 10" Walcott & Wood, h. s., cpd. r., used.
16"x 8" South Bend, c. r., h. s., new.	14"x 6" Fitchburg, s. s., p. r., used.
16"x 8" Walcott, q. c. g., d. b. g., c. r., h. s., new.	
16"x 8" American, q. c. g., used.	

#### DRILLING MACHINES.

No. 1 Burke, bench, with chucks, new.	34" No. 101 C-O. radial new.
Avey, high speed bench.	20" Silver, s. b., w. & l., new.
Demco, high speed, bench, used.	20" Silver, s. b., b. g., p. f., new.
14" Excelsior, 2 tables, new.	20" Champion, s. b., w. & l., new.
1" Leland Gifford, high speed, with pump.	20" Champion, s. b., b. g. & p. f., new.
	26" Aurora, b. g., p. f., new.
	30" Prentice, s. b., s. h., p. f., used.

#### SHAPERS.

20" Milwaukee, b. g., latest imp., new. | 24" Gould & Eberhardt, used.  
18" & 24" Hollingsworth, new.

#### SCREW MACHINES.

No. 4 Smurr & Kamen, geared friction head, p. f. to turret, new.  
No. 4 Defiance, geared friction head, p. f. to turret, used.  
No. 53 National Acme automatic, used.  
No. 52 National Acme automatic, used.  
Wood Tilted Turret.

#### MILLING MACHINES.

No. 1 U. S. hand, vise and arbor, new.  
No. 2 Pratt & Whitney, Lincoln type.  
No. OY Brown & Sharpe, used.

#### PRESSES.

No. 1 Loshbough-Jordan, o. b. i., new.	No. 53 Swaine, used.
No. 3 Loshbough-J., o. b. i., new.	No. 19 Bliss, o. b. i., used.
No. 4 Loshbough-J., o. b. i., new.	No. 1 Greenerd, arbor, used, (9).
No. 3 Kohler, o. b. i., used.	No. 2 Greenerd, arbor, used, (6).

#### SAWS.

Nos. 1 & 2 Marvel, draw cut, new. | Williamson, metal, used.

#### GRINDERS.

Nos. 1, 2 & 3 Western, d. e., new.	Essley, cylindrical.
Nos. 1, 2 & 3 St. Louis, d. e., new.	No. 190 Wells, reamer & cutter, new.
No. 20 Safety E. W. Co., elec. (4).	Greenfield universal tool & cutter, used.
U. S., electric, 110 v., d. c., bench.	

#### COMPRESSORS.

Nos. 2, 3 & 4 Model B, vertical, belted, new.  
Curtis 8x8 double cylinder, belt drive, (2).

#### MISCELLANEOUS.

Bolt threader, No. 734 Greenfield, new.	Pipe mch., No. 86 Forbes, 4", used.
Filing mche. No. 2 Cochran-B. used.	Pipe machine, No. 76 Forbes, 3", used.
Motor, 5 h. p. General Electric, 3 ph., new.	Pipe machine, 3" Borden, hand.
Motor, 10 h. p. General Electric, 3 ph., new.	Planer, 36"x36"x12" Patch, o. s., 1 hd. on cross rail. 1 head on side, used.
Motor, 1 h. p. Advance, sgl. ph., new.	Large stock of tinners' tools.

#### CHUCKS.

5" & 9" 3-jaw Sweetland, scroll, new.	5", 6", 7", 9" 3-jaw Cushman, universal, used.
8-12-14-16" 4-jaw Sweetland, independent, new.	16" 4-jaw Wescott, combination, cutting off.
No. 18 National Acme, s. o., die hd.	

## SECOND-HAND MACHINERY

### FOR SALE BY

**Stocker-Rumely-Wachs Co., 117-121 N. Jefferson St., Chicago**

In stock for immediate delivery.

#### BORING MILLS.

- 2½" Industrial Works horizontal boring mill,
- 60" Bullard, with two swivel heads.
- 42" Gisholt, (like new).
- 76" Bullard, with two swivel heads,

#### DRILLING MACHINES.

- Rockford bench drill.
- No. 1 Avey single spindle ball bearing.
- 16" Henry & Wright ball bearing, type "K".
- 5' Fosdick radial drill.
- 6' Gang radial drill.
- No. 9 Prentice Bros. radial drill, with 6' arm.

#### GEAR CUTTERS.

- 30"x 8' Gould & Eberhardt for spur gears.
- No. 3 Farwell gear hobber.
- 48" No. 4 Brown & Sharpe gear cutter.

#### GRINDERS.

- No. 10 Bealy disc grinder.
- No. 1 Cincinnati universal tool and cutter grinder.
- No. 6 Modern, internal grinder.
- 6"x32" Norton universal grinder.
- 8"x40" No. 3 Morse plain cylindrical grinder.

#### LATHES.

- 24"x12' Schumacher & Boye, compound rest.
- 30"x12' Blaisdell, compound rest.
- 32"x18' Bradford, compound rest.
- 37"x18' Fifield, compound rest.

#### MILLING MACHINES.

- No. 3 Rockford hand miller.
- Van Norman bench miller.
- No. 6 Rockford plain miller.
- No. 2 LeBlond plain miller.
- No. 15 Garvin plain, with vertical spindle attachment.

#### PUNCHES AND PRESSES.

- No. 54½ Perkins sprue cutter.
- No. 4 Walsh, open back inclinable.
- No. 2-P American Can.
- No. 16 Bliss horn press.
- No. 7 Massillon single end punch and shear, 36" throat, arch. jaws, capacity 1½" thru 1", new.

#### SCREW MACHINES.

- 14" Warner & Swasey plain head turret lathe.
- No. 4 Warner & Swasey universal, automatic chuck and wire feed.
- No. 6 Warner & Swasey, geared friction head, automatic chuck and wire feed, power feed to turret slide.
- No. 6 Foster, friction, automatic chuck and wire feed, power feed to turret.
- No. 9 Bardons & Oliver geared friction head, automatic chuck and wire feed, power feed to turret and cut-off slides.

#### MISCELLANEOUS.

- Shaper, 16" Baker, vertical.
- Slotter, 18" Canadian Machinery Corporation, good as new
- Tapping machine, No. 2 Garvin.

## SECOND-HAND MACHINERY

### FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York

Located at our various factories and stores.

#### LATHES.

12"x 8' Robbins, draw-in attach.  
14"x 8' Bradford, c. r.  
14"x 6' Whitcomb, taper, pan.  
14"x 6' LeBlond, geared head.  
14"x 8' Whitcomb, q. c.  
15"x 7' P & W speed lathe.  
16"x 6' Whitcomb, q. c.  
16"x 6' Reed, r. & f. rest.  
16"x 8' Bradford, c. r.  
16"x 8' Von Wyck, quick change.  
18"x 6' Prentice.

18"x 8' LeBlond, quick change.  
18"x 10' Flather, c. r.  
21"x 8' LeBlond, geared head, heavy duty  
21"x 8' Bradford, c. r.  
21"x 10' Bradford, c. r.  
22"x 8' Niles, c. r.  
24"x 10' Whitcomb, q. c.  
24"x 14' Pond, q. c. taper.  
30"x 14' Niles, c. r.  
30"x 16' Pond, quick change.

#### TURRET LATHES.

14" Fay auto lathe, j. l.  
2"x 24" J. & L. cone head.  
2"x 24" Warner & Swasey, hol. hex.  
2"x 26" P. & W. turret lathe  
28" size J. Gisholt, 3 1/2" spindle.

24" size I Gisholt, 220 volt, moort drive, d. c.  
28" Milwaukee rigid, 4 1/2" spindle.  
34" size K Gisholt, 4 1/2" spindle.

#### SHAPERS AND PLANERS.

18" P. & J. univ. shaper  
16" Stockbridge shaper, p. d. f.  
14"x 6' Niles sgl. trav. head shaper.  
22"x 22"x 8' Cincinnati  
24"x 24"x 6' heavy Cincinnati.  
26"x 26"x 6' Pond, 2 heads.  
30"x 30"x 6' Pond, 2 heads.  
30"x 30"x 8' Pond, 2 heads.  
30"x 30"x 12' Pond, 2 heads, 220 v., d. c., reversing motor drive.

30"x 30' x 10' Pond, 2 heads.  
32"x 32"x 6' Gray, 2 heads.  
42"x 42"x 26' Pond, 4 hds., 220 v., d. c., reversing motor drive.  
48"x 48"x 16' Pond, 3 heads.  
72"x 60"x 10' Pond, 2 heads.  
46"x 48"x 27' Pond, 4 hds., 220 v., d. c., reversing motor drive.  
72"x 72"x 24' Pond, hvy. forge, 3 hds.  
10"x 10"x 25' Pond, 220 v., d. c. motors.

#### MILLERS AND GEAR CUTTERS.

No. 1 Cincinnati univ. backgeared.  
No. 1 Brown & S. plain.  
No. 1 Cincinnati plain, cone type.  
No. 2 Becker B. plain.  
No. 2 Cincinnati plain, cone type.  
No. 3 Brown & S. univ., old style.  
No. 2 LeBlond plain, single pulley.  
No. 3 LeBlond, universal, heavy, late type.  
No. 3 plain Brown & Sharpe.

No. 4 univ. Brown & Sharpe.  
No. 5 Becker B. vertical.  
No. 2 Brown & Sharpe vertical.  
No. 5 Brown & S. vert., old style.  
No. 3 36"x 8" B. & S. gear cutter.  
No. 4 36"x 9" B. & S. gear cutter.  
No. 6 40"x 12" B. & S. gear cutter.  
15" Gleason bevel gear generator.  
24" Gleason bevel gear planer.  
48" Gleason bevel gear planer.

#### DRILLING MACHINES

No. 1 Putnam, gooseneck.  
34" Aurora, sliding head.  
24" Cincinnati Bickford, sliding hd.  
26" B. F. Barnes, sliding head.  
32" Aurora, sliding head.  
32" Cincinnati Bickford, sgl. pulley.  
60" Niles, heavy vertical.  
3" Grant radial drill and boring mch.

4" Prentice speed box radial.  
4" Niles semi-universal, old style.  
5" Niles semi-universal, old style.  
6" Niles semi-universal, old style.  
6" Pond heavy plain radial, 220 v., motor drive, d. c.  
2 spindle Allen 12" o. h.  
3 spindle Allen 12" o. h.

#### GRINDERS.

No. 2 Brown & Sharpe surface.  
No. 3 Rivett internal.  
No. 11 Brown & Sharpe internal.  
No. 1 Cincinnati cutter and reamer.  
No. 3 B. & S. cutter and reamer.  
4"x 30" No. 11 Brown & Sharpe pl.  
5"x 32" No. 11 plain Landis.  
10"x 30" No. 31 plain Landis.

8"x 48" No. 14 plain Landis.  
12"x 14" No. 14 plain Modern.  
12"x 30" No. 2 univ. Brown & Sharpe.  
12"x 40" No. 2 univ. Brown & Sharpe.  
12"x 66" No. 4 Landis universal.  
20" wet tool.  
36" wet tool.  
39" grindstone frame, B. & S.

#### BORING MACHINES

No. 1 Barnes horizontal drill.  
No. 1 Bement horiz. 28" spdl. 5' tbl.  
No. 2 Bement horiz. 31" spdl. 6' tbl.

No. 3 Bement horiz. 48" spdl. 9' tbl.  
30" Niles turret borer.  
42" Niles boring and turning mill.

## SECOND-HAND MACHINERY

Niles-Bement-Pond Company.—Continued.

### MISCELLANEOUS.

Air compressor, type 10, Ingersoll-Rand, steam driven, capacity 535'.  
Air compressor, Ingersoll-Rand duplex, motor driven, with 35 h. p., d. c. motor, capacity 215'.  
Blower, No. 10 Sturtevant.  
Blower, No. 70 Buffalo.  
Blue print mch., Wagenhorst, 60", vertical cylinder.  
Engine, 164 h. p. McEwen, direct connected to 100 k. w. generator, d. c. 220 v.  
Engine, 200 h. p. Brown, belted to 200 k. w. Westinghouse generator, d. c. 220 v.  
Hammer, 800 lb. steam, Bement.  
Keyseater, No. 2 Giant.  
Profiler No. 3 automatic, Keller.  
Saw. 8" rounds. Higley.  
Slotter, 6" Bement.

### FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

#### ENGINE LATHES.

14"x 6' Prentice, c. r., standard pat.	16"x 6' Prentice, c. r., standard pat.
14"x 6' Flather, c. r., standard pat.	17"x 7' Fulton, c. r., g. f. h. plain turning lathe.
14"x 6' Flather, c. r., standard pattern, with pan.	17"x 8' Sidney, c. r. & t. a., 3-step cone.
14"x 6' Flather, compound rest.	18"x 10' LeBlond, c. r. & t. a., 5-step cone, (2).
16"x 6' Reed, c. r., standard pattern.	18"x 10' Springfield, c. r., 5-step cone.
16"x 6' Bradford, c. r., 5-step cone, standard pattern.	Old style stud lathe.

#### TURRET LATHES AND SCREW MACHINES.

14" Lodge & Davis, plain head.	24" Lodge & Shipley g. f. h. turret lathe, 2-step cone, 6" belt, p. f. to turret, with air chuck.
14" Lodge & Davis, b. g.	No. 2-A Warner & Swasey hol. hex., with bar and chucking equipment.
24" Davis turret boring and chucking lathe, with forming rest.	4"-4" A Cleveland automatic.
No. 4 Warner & Swasey g. f. h. turret screw machines, (9).	2"-24" A Cleveland automatic.
No. 4 Warner & Swasey screw mche., with auto. chuck and wire feed.	No. 00 Brown & Sharpe automatic.
18" Acme screw mche., p. f. to tur., (4).	2" Hartford full automatic.

#### MILLING MACHINES.

No. 3 Garvin, plain, b. g.	No. 2 Bristol, hand, p. f. to table.
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#### GRINDERS.

No. 10 Cochrane-Bly auto. bench saw filing machine.	No. 1 Warner & Swasey, cock.
Whitney wet tool.	Type "DE" Hisey-Wolf internal.
Greenfield univ. cutter and reamer.	8" Blount emery stand.
B Standard Diamond grinders, (2).	Rivett ball race grinder, with countershaft.

#### HAMMERS.

Coffman post, power dr., 25 lbs., c. s.	30 lb. Bradley upright helve.
100 lb. Cady, belt drop, c. s.	300 lb. Bradley upright helve, (2).
100 lb. Bradley upright helve, (2).	

#### RIVETERS.

11 1/2" throat Giant rivet spinner.	No. 203 Giant rivet spinner.
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#### PUNCH PRESSES.

No. 2 Waterbury rack and pinion power press.	No. 11 Badger, hand.
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#### MISCELLANEOUS.

Cold saws, 12" Burke, (2).	Polishing lathes, City Machine Co., double end, (8).
Cold saw, Higley.	Polishing head.
Drill, 5 spindle Detroit semi-auto.	Tapper, 1" Burke, bench.
Filing machine, Simplex.	Tapper, 1" friction vertical bench.
Gear cutter, No. 2 Whiton auto.	Tapper, Ricker-Shafer, 3/16" horizontal, on column.
Hack saw, Excelsior, power.	Tapper, Garvin No. 2, agl. spindle.
Hack saws, Victor, power, (3).	
Polishing stands, heavy, (2).	

## SECOND-HAND MACHINERY

### FOR SALE BY

**The Burke Machine Tool Co.,** - - - **Conneaut, Ohio**

Gas engine, 40 h. p. tandem Elyria, in good condition, now running... \$400.  
Lathes, 12" taper turning, (2) each ..... 125.  
Planer, 18x18x4' Whitcomb ..... 250.  
Saw grinder, 30" automatic ..... 75.

### FOR SALE BY

**C. M. Thompson Co.,** - - - **35 S. Clinton St., Chicago**

#### REBUILT TOOLS.

Drills, sensitive floor, new and used.  
Electric blower, 118 volt, d. c.  
Lathes, 26x16', 18x8', 16x8' and 13x5'.  
Turret lathes, 2" and 3" Jones & Lamson.

#### NEW TOOLS.

Drill presses, 20".  
Grinders, hack saws, hack saw blades, and other equipment.

### FOR SALE BY

**The E. A. Kinsey Co.,** Cincinnati, Ohio, Indianapolis, Indiana

#### DRILLING MACHINES.

3' Fostick radial drill.  
1/2" type BA-1 U. S. Electric, 220 volts, 60 cycle, 3 phase.  
1/2" type T., U. S. Elect. 220 v., 60 cy.  
Bausch 4-spindle multiple.

#### GRINDERS.

Grinder, 16x36 Queen City plain.  
Grinder, No. 2 Cincinnati universal, complete.  
Grinder, No. 2 Brown & S. univ.  
Norton No. 1 universal grinder.  
Water tool, 36 in. wheel.  
Wesche electric buffing, a. c. motor.

#### LATHES.

14x 6' Monarch, d. b. g., c. r.  
16"x 8' Seneca Falls, q. c.  
19"x10' Greaves-K., c. r., s. & f. r.  
20x10' Bradford, 2 c., c. r.

#### PLANERS.

32"x32"x8' New Haven.  
18' Niles-B.-P. plate, 1/2" steel plate.  
54-54x30 H. P. Betts; rev. d. c. motor.  
24"x30"x6' Gray, 1 head, (2).  
26"x30"x6' Ohio, 1 head.

#### TURRET AND SCREW MACHINES.

No. 1 Am. Tool & M. Co., sq. ar., s. b. g., 4 s. c.  
No. 4 Brown & Sharpe, w. fd., (7).  
3x36 Jones & Lamson flat turret.  
No. 2 Warner & Swasey, (2).  
No. 2 Garvin, w. f., power feed turret, automatic chucks.

#### MILLING MACHINES.

Milling mche., No. 1 B. & S. univ., spiral head centers.  
No. 2 B. & S. heavy, plain, (2).  
No. 3 B. & S. heavy, plain.  
No. 3B B. & S. heavy, plain.  
45" Newton plain.  
No. 3 Cincinnati plain.  
Newton 21"x6' slab miller.  
No. 13 Brown & Sharpe plain.

#### MISCELLANEOUS.

Abrasive metal cutter, 12" Peters.  
Band saw, 36" Towsley, with motor.  
Bolt cutter, 2 1/2" Acme, dbl. spindle.  
Centering att., Carroll No. 2, cap. to 2".  
Chain machine, Cross & Spiers.  
Chuck, 12" universal.  
Cutting-off mch., 3" Hurlbut-Rogers.  
Gas furnace, No. 93 Stewart dbl. end.  
Gear hobber, 18" Gould & Eberhardt.  
Gear hobber, No. 3 Farwell.  
Oil pump, Trahern No. 1 F. rotary.  
Profiler, Pratt & W. No. 12, belt.  
Riveter, 3-16" Schuster, on ped.  
Saw bench, Beach, table 36x54".  
Screw mche., No. 2 Brown & Sharpe automatic.  
Special internal grinding fixture Brown & S., for No. 1 universal.  
Tapping machine, Garvin No. 1.  
Vise, flanged, Brown & Sharpe No. 4.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Harris Brothers Company, - 35th & Iron Sts., Chicago, Ill.**

#### ENGINE LATHES.

Screw-cutting quick change mechanism, 3-step cone, dbl. bk. grd., comp. rests:  
 18"x 6' Ryerson, (4). | 20"x10' Canada Machy. Corp., (5).  
 With turrets on carriage with compound rests:  
 18"x 6' Canada Machy. Corp., (2). | 20"x 8' McDougall, (3).  
 With loose change gears, 3-step cones, dbl. back grd., and compound rests:  
 18"x 8' Sidney, (3). | 18"x 8' Milwaukee, (6).  
 With loose change gears, compound rests, single back geared:  
 18"x 8' Williams. | 18"x 8' P. P. Silk, (3).  
 18"x 6' Cincinnati. | 21"x 7' Bertram.  
 18"x 8' Barker, (4). | 22"x10' Bradford.  
 18"x 6' Giddings & Lewis, (4).  
 Plain turning lathes with plain rests. (Not screw cutting):  
 16"x 6' Rockford, pan bed, (10). | 20"x 8' Simplex, (4).  
 With turret on carriage but without plain rest:  
 18"x 8' Milwaukee, (10).  
 All the above lathes have hollow spindles and countershafts.

#### DRILL PRESSES.

Colburn 25" swing, heavy duty, high speed, No. 5 Morse taper, single pulley drive, (9). | Barr 2-spindle 14" sensitive, cap.  $\frac{3}{4}$ ".  
 Brown & Sharpe 36" vertical boring mill, with tur. hd. and chuck jaws.

#### GRINDERS.

Wells Bros. cutter and reamer. | Ford Smith cylindrical grinders, (2).  
 Yankee twist drill grinder. | 10" Wells speed lathe grinders, (10).  
 No. 1 Fraser universal cylindrical | Cincinnati universal cutter grinder.  
 8" swing, 20" centers. |  $\frac{1}{2}$  h. p. Electric grinders, (5).

#### TURRET LATHES.

Jones & L. 3"x36" bar outfit, (3). | W. P. Davis 24" swing set over turret, all power feeds, (2).  
 Warner & Swasey No. 4, 16" swing.

#### MILLING MACHINES.

Rockford No. 1 $\frac{1}{2}$  plain table, 38"x9".  
 Ford-Smith No. 2 plain table, 46"x10".  
 No. 6, 48" swing vertical Becker, latest type, improved standard miller, all power feeds, longitudinal 62"; transverse 20"; vertical 20"; power down feed to spindle head, 12" power feed to rotary.

#### HACK SAWS.

Racine high speed, 6" capacity. | Peerless high speed, 6"x6".

#### PUNCH PRESSES.

Williams straight sided, b. grd., sgl. action punch press, 22" between uprights.

#### TESTING MACHINES.

Tinius Olsen tensile testing machine, 4-screw type.

#### HAMMERS.

Mayer Brothers 250 lb. trip hammer. | 6,000 lb. Chambersburg steam hammer, brand new.  
 Board lift drop hammers, 1000 lb., (2).  
 Board lift drop hammers, 2000 lb., (2).

#### PUNCHES AND SHEARS.

Long & Allstatter combination shear and beveling mche., wt. about 25,000 lb.  
 Alligator shear for 14"  
 Wiener steel plate "1" beam shear for 15" "I" beam.  
 Thompson bevel cutting shear,  $\frac{3}{4}$ " plate.  
 Hillis & Jones sgl. end punch, 8" throat, architectural jaw, cap.  $\frac{1}{4}$ " thru  $\frac{3}{4}$ ".

#### TRAVELING CRANE.

Niles electric traveling crane, 46' span, 15 ton cap., with auxiliary hoist, 5 ton, 4 motor type, 220 d. c.

1000 lbs. of Stellite and Red Cut High Speed Steel.

Our complete Machinery Bulletin sent upon request.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.**

Engine lathe, 36"x23" Johnson, triple geared and gear face plates, with two sets of raising blocks 52" to 62".  
 Engine lathe, 28" Fitchburg, double back geared.  
 Engine lathes, 36"x14" American, double back geared, quick change, (2).  
 Engine lathes, 26"x12" Wickes, double back geared, (2).  
 Engine lathes, 26"x14" Wickes, double back geared, (2).  
 Engine lathe, 25"x16" Blaisdell, taper attachment, 12' between centers.  
 Engine lathes, 24"x16" Lodge & Shipley, late type, (3).  
 Engine lathe, 21"x12" Lodge & Davis, taper attachment, 7' between centers.  
 Engine lathes, 18"x8" Lodge and Shipley, dbl. back geared, quick change, (2).  
 Engine lathes, 16"x8" Lodge & Shipley, double back geared, taper att (4).  
 Engine lathes, 18"x5" American, double back geared, quick change, (12).  
 Engine lathes, 16"x5" LeBlond, double back geared, quick change (10).  
 Lathes, lot of 12", 14" and 16" quick change, with various size beds.  
 Grinder, No. 1 Cincinnati, universal cutter and tool, standard equipment.  
 Grinder, No. 2 Bath universal, with standard equipment.  
 Grinder, No. 13 Brown & Sharpe universal.  
 Grinder, No. 2 Brown & Sharpe universal.  
 Planers, 36"x36"x12" Wilson, two heads on cross rail.  
 Shapers, 16" Gould & Eberhardt; 20" and 24" Kelly, and 24" Queen City, all late type and back geared.  
 Turret lathes, 2"x24" J. & L., grd. set-over hd., sgl. pulley dr., bar equip., (4).  
 Turret lathes, 3"x36" J. & L., late type, 24" and 21" Gisholt late type, (5).  
 Large lot of screw machines, drill presses, punch presses, etc.  
 Send for our List.

### FOR SALE BY

**A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago**

#### PUNCH PRESSES AND PUNCHES AND SHEARS.

No. 3 American Can, o. b. i.  
 No. 3-P Ferracute, solid back.  
 Waterbury reducing press, 7 1/2" str.  
 No. 29 Bliss, gang, double action.  
 No. 6 L. & A., 4" thr., cap 1/4" s. e.  
 Rock River d. e. 24" thrs., cap. 1/4".  
 No. 37 Williams & W. gang punch.

#### DRILL PRESSES.

21" Cincinnati, tapping attach.  
 24" Rockford, stationary head.  
 30" Rockford, sliding head.  
 42" Barnes, sliding head.  
 42" Miles radial, plain.  
 New drills, 14" to 24".

#### ENGINE LATHES.

14"x 6' LeBlond engine lathe.  
 16"x12" Beaman & Smith, taper.  
 20"x 8' Boye-Emmes, d. b. g. q. c.  
 24"x10" Putnam.  
 26"x25" Blandell.

#### MILLING MACHINES AND PLANERS.

No. 1 Brown & Sharpe plain.  
 No. 3 Cincinnati plain.  
 No. 5-B B-cker vertical, (2).  
 22"x22"x5' Ingersoll slab.  
 New lathes 13" to 18".  
 No. 6 Bramard, Lincoln.  
 16"x16"x36" Draper planer.  
 30"x27"x 6' Putnam planer.

#### SCREW MACHINES.

7-16" Cleveland, friction feed.  
 1" Cleveland, friction feed.  
 1 1/2" Cleveland, friction feed.  
 1 1/2" Cleveland, jigger feed.  
 1" Hartford, (3).  
 1" Cleveland.  
 1 1/2" LaVigne.  
 1 1/2" Cleveland, semi-automatic.

#### MISCELLANEOUS.

Blower, No. 7 Sturtevant high pressure.  
 Gas engine, 35 h. p. Columbus.  
 Gas engine, 55 h. p. Bruce McBeth.  
 Grinder, No. 38 Safety Planer.  
 Grinder, Springfield, double wheel water.  
 Grinder, Leland & F., water.  
 Hammer, 500-lb. Sandage.  
 Hobber, No. 1 Farwell.  
 Oil gas generator, No. 3 American.  
 Rivet spinner, Grant, 3/16".  
 Saw, No. 54 Nutter Barnes.  
 Taper, No. 1 Garvin automatic.  
 Tube cutter, No. 5 Fox.  
 Turret lathe, No. 3 Foster, pl. hd.  
 Turret lathe, 24"x26" Greenlee.  
 Turret lathe, 20" Fay & Scott.

## SECOND-HAND MACHINERY

### FOR SALE BY

McCoy-Brandt Machinery Company

Office and Warehouse, 210-218 Penn Ave., Pittsburgh, Pa.

### BOLT CUTTERS.

- 4" Acme, double-head, with motor. Nut tapper, 2-appl. Acme, 1 1/2", pan.  
1 1/2" Acme, dble.-hd., oil pump, pan.

### DRILLING MACHINES.

- Multiple 8-spindle Foote-Burt. 24" Barnes, plain, sliding head.  
20" Baker heavy duty, power feed. 24" Cincinnati, pwr fd., sliding hd.  
24" Colburn hvy. duty, No. 4 Morse. 28" bk. grd., pwr. fd., sp. 1-3/16" hole.

### LATHES-TURRET.

- 3x36" J. & L., chucking equipment. 3x36" J. & L., bar equipment.  
2 1/2" Garvin, 6-hole hexagon turret, B. & S. 14" h.s., 7-hole round turret,  
12" box chuck. 9" box chuck.

### GRINDERS.

- 126" Bridgeport, cupwheel, knife. Bath univ. tool & cutter, 14x40".  
B. & S. plain, 12x12", auto. feed. No. 13 B. & S. univ. & tool, auto. fd.

### MILLING MACHINES.

- No. 1 B. & S. plain, hand feed. No. 3 Cincinnati plain, q. c. g.  
No. 3 B. & S. universal, 12" index No. 2 Cleveland, universal.  
head, table 10x50".

### LATHES.

- 48" Niles car wheel turning, journal attachment, m. d. 17"x8' Sidney, q. c. g., d. b. g., c. r.  
42"x20' Niles boring lathe. 16"x 6' Prentice, h. s., c. r., 12" 4-jaw chuck.  
24"x15' Fifield, solid spdl., pln. rest. 16"x 6' R. M. & C., h. s., c. r., 12"  
24"x12' S. B. & E., 5" raising blocks, 4-jaw chuck.  
h. s., c. r., 15" 4-jaw chuck. 16"x 6' LeBlond, h. s., c. r., 12" 4-jaw chuck.  
24"x10' LeBlond, q. c. g. 14"x6' Hendey, geared hd., q. c. g., c. r.  
20"x10' LeBlond, q. c. g. Speed lathes, 17", 15", 13"—4' bed.  
20"x 8' LeBlond, q. c. g., t. a.  
18"x 8' Rockford, q. c. g., h. s., c. r.

### MOTORS AND GENERATORS.

- 30 & 20 h. p., 3-60-220 v. 7 1/2 h. p. Triumph, 220 v., d. c., elev. duty  
10 h. p. Fairbanks, 2-60 440 v. 15 h. p. G. E., 500 v., d. c.  
1 h. p., 2-60-220 v., 1900 rev. 90 k. v. a. Lincoln, 3-60-220 v.  
10 & 4 1/2 h. p., series wd., 220 v., d. c.

### PRESSES AND BRAKES.

- Perkins punch, 2" stroke, 4,500 lbs. 13' 6" Garrison brake or press, cap.  
Consolidated, geared, 4" stroke. 1/2", weight 118,000 lbs.  
8' Robinson toggle press.

### PUMPS.

- 3 1/2"x24" Deane deep well, 25 g. p. m. for motor drive. 3 1/2"x10" Deane triplex, belted.  
7x5x10" Hall, duplex, steam.

### PUNCHES, SHEARS AND ROLLS.

- 14" throat I. & A., cap. 2 1/2"x1 1/2". Guillotine shear, No. 3 Cleveland,  
48" throat Reade, cap. 1 1/2" thru 1 1/2". 3 1/2" stroke, capacity 2" sq.  
36" throat Whiting, cap. 1" thru 1". Guillotine shear, No. 5 Cleveland,  
36" thrt. Cleveland, cap. 1" thru 1". 3" stroke, capacity 2 1/2" sq.  
15" throat, double, capacity 1 1/2"x1". Guillotineshear, Cleveland, 3" stroke,  
Williams-White No. 13. capacity, 2" square.  
14" throat, double, capacity 2 1/2"x1 1/2". Slitting shear, rotary, 23" throat,  
No. 11 Williams-White. capacity 1 1/2", Newbold.  
50" thrt., sgl., cap. 1 1/2"x1" Cincinnati. Bevel shear, Thompson, rated cap. 3".  
Guillotine shear, No. 3 Wilder, cap. 1, 1 1/2" stroke. Squaring shear, 26" pwr., cap. 16 ga.  
Rolls, 10' Bertsch, cap. 14" gauge.

### SHAPERS AND PLANERS.

- 20" Steptoe, crank. 30"x30"x10" Sellers, 1 head.  
24" Cincinnati, crank, b. g., vise. 24"x24"x6" American, 1 head.

### STEAM HAMMERS.

- 1000 lb. N.-B.-P. dble. frame, (4). 700 lb. Pittsburgh, dble. frame, (3).  
700 lb. N.-B.-P. dble. frame, (6). 600 lb. Morgan, double frame, (7).

### MISCELLANEOUS.

- Boring mill, No. 1 Sellers horizontal Pipe machine, 8" E. C. & B., dies.  
2 1/2" bar. Seamer, 30" dbl. P. S. & W., hand.  
Compressors, 9x5x10" Westinghouse.

## SECOND-HAND MACHINERY

### WANTED BY

Signal Accessories Company, Inc.,

Utica, N. Y.

### PILLAR PRESS.

We are in the market for a No. 7 or No. 12 Geared Straight Sided Pillar Press, made by the Waterbury Farrel Foundry & Machine Co. It may be a used or second-hand machine, but must be in good, first-class condition.

### FOR SALE BY

Reliance Machinery Sales Co., 114 West Park Way, Pittsburgh, Pa.

Boring mill, 30" Bullard vertical.

Cut-off machine for tubing.

Drill press, 24" Rockford.

Drill press, 24" Barnes camel back.

Grinder, No. 3 B. & S., univ. cutter & r.

Grinder, Brandes tool, with motor.

Grinder, No. 1 W. & M. surface, new.

Grinders, Yankee drill, all sizes, new.

Lathe, 16"x 6" LeBlond.

Lathe, 16"x 8" Hendey, q. c. g.

Lathe, 18"x 8" Superior, d. b. g., q. c. g.

Lathe, 20"x 8" Lodge & Shipley, geared head.

Lathe, 22"x 10" Davis, d. b. g., q. c. g.

Lathe, 26"x 10"x 6" Walcott, d. b. g., q. c. g.

Libby lathes, 18", 22" and 26"

Miller, No. 4 Garvin universal.

Punch, No. 1 Hilles & Jones sgl. end.

Radial drill, 6" post, 1" cap.

Shaper, 20" Smith & Mills.

Turrets, 24" & 28" Steidle & Gisholt.

Large stock of new and used Grinders, Drill Presses, Hack Saws, etc.

### FOR SALE BY

Federal Machinery Sales Company,

8 N. Jefferson St., Chicago, Ill. 208 Sycamore St., Milwaukee, Wis.

USED and NEW Tools.—Immediate shipment.

### DRILLING MACHINES.

New 20" Silver, 2 with w. and l. feed, one with b. g., p. f., (3).

New 24" Hoefer sliding head, back gear, power feed.

New Snyder 20" sliding head, back gear, power feed.

New 3" Mueller plain radial, gearbox drive.

Used 4" Dreses plain radial, gearbox drive.

Used 5" Bickford full universal radial.

Used 6" Bickford plain radial, cone type.

Used Woodward & Rogers 3-spindle, 14" sensitive.

### GRINDERS.

Used No. 1 Cincinnati cutter grinder.

Used No. 2 Brown & Sharpe universal.

Used 12" Waukesha precision ring and surface, with magnetic chuck.

Used No. 2 Diamond open side surface grinder, table 36"x 12".

Used No. 6 Besly disc grinder.

### LATHES.

New Dalton type B-4, 6"x 36" bench, on legs.

Used 15"x 6" Von Wyck, hollow spindle.

New Oliver 16"x 7", quick change gear, regular equipment.

Used 18" raised to 22"x 10" Springfield, hollow spindle, rev. turret tool post.

Used 19"x 13"x 4" Flather, quick change gear, h. s., c. r., relieving attach.

Used 21"x 10" lathe, l. c. g., compound rest, chuck.

Used 31"x 17 1/2" Pond compound rest, single back gear, 26" chuck.

Used 14"x 24" gap 5' bed Barnes sliding bed gap lathe.

### MILLING MACHINES.

Used No. 2 Cincinnati universal.

Used No. 3 Cincinnati universal.

### PLANER.

Used Enterprise 30"x 30"x 6' one head.

### MISCELLANEOUS.

Pipe machine, used 4" Victor.

Turret lathe, used 20"x 8" Bridgeport.

Thread miller, used No. 8 Lees-Bradner, 4' 6" centers.

Above list is incomplete. Write us, giving specifications of anything required.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Russell Machine Company, 28th St. & A. V. R. R., Pittsburgh, Pa.**

#### LATHES.

- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| 48"x16" bed lathe, compound rest. | 20"x8'6" Walcott, q. c. g., (3).      |
| 48" Niles car wheel, m. d.        | 19"x10' LeBlond, motor drive.         |
| 38"x25" New Haven, raised to 56". | 16"x 6' Blaisdell, h. s.              |
| 38"x18" Pond, triple geared.      | 18"x 8' Blaisdell, plain rest, taper. |
| 30"x14' 8" Schumacher-Boye.       | 15"x 6' Hamilton, h. s.               |
| 27"x12" Pittsburgh, dbl. b. g.    | 15"x 6' Von Wyck, compound rest.      |
| 26"x16" Draper, triple geared.    | 9"x40" Barnes, foot power.            |
| 26"x10'6" Walcott, q. c. g.       | 14"x 8' American speed lathe.         |
| 24"x16' 6" Johnson lathe.         | 24"x11' American semi-auto. turret.   |
| 24"x12" Dietz, Schumacher & Boye. | 14"x 5' Fox brass lathe.              |
| 20"x12" Prentice, h. s., c. r.    | Speed lathes, various sizes, (10).    |

#### PLANERS AND SHAPERS.

- |                                      |                                    |
|--------------------------------------|------------------------------------|
| 24"x24"x 8' Chandler planer, 1 head. | 20" Cincinnati b. g. crank shaper. |
| 27"x21"x8' planer, 1 head.           | 16" Garvin open throat shaper.     |
| 33"x33"x10' Woodward-Powell, 2 hd.   | 16" Rockford and Hendey shapers.   |
| 36"x36"x12' Pond, three heads.       | 32" G. & E. b. g. crank shaper.    |
| 72"x56"x12' Betts planer, 3 heads.   |                                    |

#### DRILLS AND BORING MILLS.

- |   |  |
|---|--|
| Burke sensitive bench Nos. 0 & 1.       | 4' Bickford radial, box table.         |
| No. 3 Prentice port. rope drive drills. | Beaman-Smith hor. boring, drilling     |
| 20" Silver, new, plain and bk. gd.      | & milling mch., 4" bar, 36" travel.    |
| 20" Foote-Burt mfrs. vertical.          | Garvin 4 spindle drill press.          |
| 20" Barnes plain drill.                 | Baush 12 spindle multiple drill.       |
| 24" New Haven plain drill.              | 48" Niles car wheel boring mill.       |
| 26" Prentice, b. g., sliding head.      | 60 & 76" Bullard vertical bor'g mills. |
| 38"x40" New Haven drills.               | 72" Niles & Pond vert. bor'g mills.    |

#### HAMMERS AND MILLERS.

- |                                    |                                    |
|------------------------------------|------------------------------------|
| 1500 lb. double leg steam drop.    | Little Giant 50 lb. power hammer.  |
| 1500 lb. single leg steam forging. | No. 0 Owen plain miller.           |
| Bradley cushion helves, 40 lb.     | No. 2 Brown & Sharpe univ. miller. |

#### ENGINES, BOILERS AND PUMPS.

- |                                      |   |
|--------------------------------------|---|
| 50 k. w. American steam elect. unit. | 50 h. p. vert. submerged tub. boiler.     |
| 4 h. p. Fowler vertical gas engine.  | 6 h. p. vertical single flue boiler, (4). |
| 40 h. p. Backus horiz. gas engine.   | Pumps, various sizes and makes.           |
| 50 h. p. White-Middleton gas engine. |   |

#### PUNCHES, SHEARS.

- 50" throat Reade sgl. end punch and shear; massive construction.  
 No. 8 L. & A. geared s. e. punch,  
 3 1/2" throat, punching cap. 8" x 1/2".  
 Niagara No. 24 hand punch, 15" thr.  
 49"x1" Wais & Roos sq. shear.  
 Bliss geared slitting shear, 18" thr.  
 Perkins No. 2 rotary shear, 12" thr.

#### MISCELLANEOUS.

- Air compressor, No. 0 Au-To 3"x4".  
 Air compressor, s. cyl. 3x5", belted.  
 Air compressor, double cyl. 2 1/2"x4".  
 Air compressor, 6x6 Laidlaw hor.  
 Bender, Wallace No. 11 angle, hd. pr.  
 Bender, Hinman No. 1 Eye, hd. pr.  
 Blower, Root No. 3 Acme, hand.  
 Blower, pressure, No. 0 Sturtevant.  
 Blower, pressure, No. 3 Sturtevant.  
 Blower, Buffalo No. 10, pressure.  
 Bolt cutter, 2" Acme, single head.  
 Brazing table, all iron, 17"x29 1/2"x31".  
 Centering mch., Whiton 6" sgl. spdl.  
 Chain belt, 16"x8"x1 1/2" p. and gear.  
 Cold saw, Newton, 20" dia., 5 1/2" rd.  
 Crane, 10" I-beam, 12'3" span, with  
 Harrington 6,000 lb. chain hoist.  
 Cutting-off mch., Hurlburt R. 4".

#### PRESSES AND ROLLS.

- No. 3 R. & K. inc. presses, 2 1/2" str.  
 No. 3 Kohler inc. press, 1 1/2" str.  
 No. 56 dbl. housing knuckle press.  
 No. DG-76 Ferracute single acting.  
 Straight-side punch press, 4" str.  
 No. 4 Stevenson foot pwr., 6" thrt.  
 60"x8" hand power rolls.  
 Toledo No. 365 gap rolling mill.

- Grinders, Western Nos. 1, 2 and 3.  
 Grinder, 10" dbl. e. emery on column.  
 Grinder, Diamond 12" d. end bench.  
 Grinder, Russell 12" dbl. end bench.  
 Grinder, Lancaster 16" d. e. emery.  
 Grinder, Barnes 20" wet tool.  
 Grinder, 20" Ransom w. t., 250 v., d.c.  
 Grinder, Cincinnati tool and cutter.  
 Grinder, Dayton surface, 16 1/2"x36".  
 Grinders, Landis 26x96; Cinti t. & c.  
 Grinder, twist drill, cap. to 2 1/2".  
 Hack saw, Sterling, cap. 5"x5".  
 Metal rockers, 10 sections.  
 Polishing stand, Diamond No. 2.  
 Polishing stand, d. end, 42"x1 1/2" arbor.  
 Polishing stand, Cuyahoga dbl. end.  
 Tapping machine, No. 2 Garvin.  
 Vises, Forges, Tanks.

## SECOND-HAND MACHINERY

### FOR SALE BY

**H. D. Warner,**

**57 May St., Hartford, Conn.**

Annealing furnace, automatic rotary.  
Automatic, 1 1/2" multi-spindle. Gridley.  
Automatic, 1" Cleveland.  
Automatic, 1 1/2" Cleveland.  
Automatics, 6" Cleveland, (3).  
Automatics, 3 1/2" Cleveland, (2).  
Automatics, No. 23 New Britain, (6).  
Broaching mchs., No. 1 Lapointe, (5).  
Broaching mchs., No. 3 Lapointe, (2).  
Chucking mchs., No. 33 New Britain.  
Drill presses, 3-spindle Allen, (6).  
Drill presses, 4-spindle Allen, (6).  
Drill presses, 5-spindle Allen, (4).  
Drill presses, 6-spindle Allen, (2).  
Drill press, 4-spindle Norton & Jones.  
Drill press, 4-spindle Barnes.  
Gear cutters, 3"x36" B & S., (6).  
Gear shaper, Fellows 36".  
Grinder, No. 2 Landis universal.  
Hammer, steam, 600-lb. Niles-Bement-Pond, nearly new.  
Hammer, steam, 1000-lb. Niles-Bement-Pond, nearly new.  
Hammer, steam, 1200-lb. Niles-Bement-Pond, nearly new.  
Header, 1 1/2" Acme hot bolt.

Lathe, 2"x24" J. & L., sliding head.  
Lathes, new 1918, 3"x36" J. & L., (10).  
Millers, No. 12 B & S plain, (2).  
Millers, P & W, Lincoln, (6).  
Millers, Briggs type A, (2).  
Milling machines, 12" light automatic P. & W., (40).  
Milling machines, No. 6 automatic, Bilton Machine Tool Co., (8).  
Millers, Whitney hand No. 6, (40).  
Press, No. 55 Toledo, 1" stroke.  
Presses, No. 774 Bliss.  
Presses, No. 604 Bliss.  
Presses, No. 58 Toledo.  
Profilers, P. & W. 2-spindle, (4).  
Screw machine, No. 3 P. & W., hand.  
Screw machine, No. 4 B. & O., hand.  
Screw mche., No. 3 B. & O., hand, (3).  
Screw mche., No. 8 B. & O., hand, (1).  
Screw machine, No. 6 W. & S., hand.  
Shear, alligator, to cut 1 1/2" square cold steel.  
Spot welder, Toledo, 1" capacity.  
Thread milling machine, P. & W.  
Tote boxes, metal, assorted sizes, (10,000).

### FOR SALE BY

**Chas. Molitor Machinery Co.,**

**124 S. Clinton St., Chicago, Ill.**

#### LATHES.

16"x 8' Monarch, qu. ch. (2).  
17"x 8' Cincinnati, qu. ch.  
18"x 8' LeBlond, qu. ch.  
19"x 8' Sidney, db. c.g., quick change, heavy duty, (2).

24"x 8' American, qu. ch., taper backing off attach., turret.  
36"x14' Putnam.  
18"x 8' South Bend.

#### TURRET LATHES AND SCREW MACHINES.

18" Libby, (3).  
3"x36" Jones & Lamson, (3).  
22" Greenlee, (5).  
16" Wood tilting turret.

No. 1 Brown & Sharpe, semi-auto.  
Acme.  
Foster.  
Foster.

#### SHAPERS AND PLANERS.

20" American, tilting table.  
20" Steptoe.  
13" Steptoe crank, tilting table.

20" Hendey geared friction.  
32"x32"x8' Pond planer.  
22"x22"x5' Hendey planer.

#### PUNCH PRESSES AND HAMMERS.

No. 57 Toledo, straight b. g.  
No. 3 Ferracute, horning, b. g.  
No. 69 Bliss double action.  
No. 3 Royersford dbl p. & shear.

Bradley hammer.  
Bowman spring hammer.  
38"-42" Arch presses.  
No. 6 Whiting punch.

#### DRILL PRESSES AND TAPPING MACHINES.

30" Niles Bement sliding head.  
25" Foote-Burt, (2).  
24" Cincinnati, sliding head.  
24" Barnes, sliding head.

1 & 2 spindle Avey bench drills.  
4 sp. Henry & Wright, 1/2" capacity.  
4 sp. Acme nut tapper.  
Rickert-Shafer tapping mchs., (3).

#### MISCELLANEOUS.

Broaching mchs., No. 2 Lapointe, (2).  
Drilling & mil. mche., No. 1 Knight.  
Gear cutter, 36" Gould & Eberhardt.  
Gear cutter 48" Gould & Eberhardt.  
Grinder, 18"x 9' Landis auto. pl.  
Grinder, 12"x32' Landis auto. pl.

Grinder, 10"x36' Thomson auto. univ.  
Grinder, 4-sp. Foote-Burt vert. cock.  
Miller & grinder, Saxon vertical.  
Miller, No. 2 Berker vertical.  
Pipe threaders, 2"x4".  
Rotary grinder, N. Y. Safety Co.

## SECOND-HAND MACHINERY

### FOR SALE BY

**B. C. Allen Machinery Co.,**

**104 S. Clinton St., Chicago**

Blowers, Nos. 4 and 6 Buffalo.		Lathe, 26"x16" Wright, c. r. ....	\$ 700.
Bolt cutter, 1 1/2" Merriman.....	\$ 225.	Lathe, 26"x16" Putnam, c. r. ....	1000.
Drill press, 15" Barnes.....	65.	Lathe, 16"x10" speed.....	140.
Drill press, 15" Rockford.....	50.	Lathe, 12" Warner & S. turret.....	100.
Drill press, 22" sliding head.....	100.	Lathe, 16" Warner & S. turret.....	225.
Drill press, 24" b. g., p. f.....	225.	Lathe, 14" Fox.....	210.
Drill press, 26" sta. head, p. f.....	150.	Lathe, 2"x24" J & L. turret.....	300.
Drill press, 13" 4 spdl. sens.....	100.	Miller, No. 2 Hendey, q. c. g.....	850.
Drill press, 14" 4 spdl. sens.....	150.	Planer, 22"x22"x5".....	400.
Drill press, 20" Barnes 2 spdl.		Planer, 17"x17"x40".....	225.
b. g., p. f.....	250.	Planer, 37"x27"x7".....	300.
Emery grinders, Nos. 1, 2, 3 & 4.		Punch press, No. 2 sta. head.....	125.
Emery grinders, heavy floor.....	200.	Punch press, No. 4 sta. head.....	350.
Forge, with hood.....	12.	Punch press, No. 2 horn.....	165.
Hack saw, 4"x4".....	15.	Rolls, tinners', 30".....	20.
Hack saw, 7"x8".....	25.	Rolls, tinners', 38".....	50.
Hack saw, high speed.....	100.	Rolls, 50"x4".....	125.
Lathe, 14"x 6" Reed, c. r.....	275.	Screw machine, 1" Pratt & W.....	350.
Lathe, 16"x 6" LeBlond, c. r.....	325.	Screw machine, 1 1/2" f. head.....	475.
Lathe, 18"x 6" Lodge & D. c. r.....	375.	Shaper, 15" G. & F. crank.....	300.
Lathe, 24"x14" Draper, q. c. g.....	950.	Shaper, 24" Steptoe geared.....	425.

### FOR SALE BY

**Herman L. Winterer,**

**943-53 N. Front St., Philadelphia, Pa.**

#### LATHES.

31"x14" Niles.		26"x10" Niles, quick change gear (2).	
32"x12" Pittsburgh, q. c. g.		21"x10" Fitchburg.	
25 1/2"x26" Johnson.		20"x16" Putnam.	
28"x12" Bridgeford, quick change		20"x8" 6" Walcott, double back gear,	
gear (2).		quick change gear, (3).	
26"x12" Wickes, q. c. g. (2).		And many others.	

#### TURRET LATHES.

22" Gisholt.		No. 4 Warner & Swasey, Fox attach.	
3"x36" Jones & Lamson.		And many others.	
7"x14" Potter & J. semi-auto., (2).			

#### DRILL PRESSES.

6" Newton radial.		25" Weigel.	
40" Barnes horizontal radials, (2).		20" Baker, (5).	
36" Bickford radials, circular base,		Plain drills, all sizes.	
table, motor driven, (2).		Drill presses, assorted sizes, (21).	
36" Dreses radials, (2).			

#### MILLING MACHINES.

36"x8" Ingersoll horizontal.		Newton plain, table 42"x8".	
25"x6" Garvin No. 15 slab, q. c. g.		Brown & Sharpe, 5"x28" universal	
No. 6 Becker vertical.		table, (2)	
No. 3H LeBlond univ., heavy duty.		No. 3 Garvin hand, horizontal.	
No. 2A Kemp Smith.		Whitney hand.	
Newton universal, table 50"x8".		And many others.	

#### MISCELLANEOUS.

Boring mill, 38" Beaman & Smith.		Grinder, tool room, Heald univ.	
Boring mill, 34" Newton bar wheel.		Grinder, roll, 34"x10 1/2" Diamond.	
Boring mill, 34" Bullard vertical.		Punch presses, all sizes.	
Boring mill, 30" Bullard vertical.		Saws, 6" Newton, cold, (2).	
Grinder, disc, No. 1. Besly			

#### BOILERMAKERS' AND SHIP MACHINERY.

Flanging press, 100-150 ton capacity.			
Hammer, steam, Dudgeon 1500 lbs. capacity.			
Punch, 43" gap Perkins, 1 1/2" in 1 1/2".			
Riveter, 8 1/2" Wood hydraulic.			
Shear, 24" Haus Kraut, beam, channel and angle, capacity 3"-24".			
Large assortment of General Machinery. Send for complete list.			

## SECOND-HAND MACHINERY

### FOR SALE BY

**E. L. Esley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.**

#### DRILL PRESSES.

5' Niles full universal radial.  
No. 2½ Avey single spindle.

20" 4 spindle Barnes all geared gang.  
No. 11 Natco multiple drills.

#### GRINDERS.

No. 1 Cincinnati, universal.  
No. 3 B. & S. comb., cutter & reamer  
No. 190 Wells cutter and reamer.

No. 1 Norton univ. cutter & reamer.  
No. 1 4"x20" Morse cylindrical.  
No. 2 10"x32" Ott universal.

#### LATHES.

11"x 5' Star.  
16"x6' Lodge & Davis, taper att.  
16"x 8' Von Wyck, taper att.  
18"x 5' Bradford, q. c. g., taper att.

20"x 8' Hamilton.  
22"x12' Greaves & Klusman.  
24"x12' Prentice Bros.  
36"x14' Bradford.

#### SCREW MACHINES.

¾" Cleveland automatic.  
No. 5 Pearson, hand, fric. head.  
1"x15" Pratt & Whitney, plain head.

No. 3 Foster, plain head (7).  
No. 4 Foster, plain head (5).  
¾" Smurr & Kamen, plain head.

#### MISCELLANEOUS.

Boring mach., No. 0 Fosdick.  
Broaching machine, No. 3 Lapointe.  
Cold saw, No. 14 Higley.  
Gear cutter, No. 3 B. & S. auto.  
Miller, hand, No. 2 P. & W.  
Miller, No. 2½ Hendey, Lincoln type.

Pipe machine, No. 9½ Merrell  
Planer, 26"x22"x6' Gleason.  
Planer, 32"x32"x12' Davis & Egan.  
Planer, 42"x42"x6' Whitcomb.  
Punch, Sellers single end, 26" thr.  
Turret lathe, 2"x24" J. & L.

### FOR SALE BY

**Wm. C. Johnson & Sons Machinery Co.,**

**1001-3-5 N. Sixth St.,**

**St. Louis, Mo.**

#### LATHES.

14"x 6' Whitcomb-Blaisdell.  
16"x 7' Oliver q. c. gear.  
18"x 8' Hamilton.  
18"x 8' Reed.  
18"x 9' Chard.  
20"x 8' Lodge & Shipley.

21"x10' LeBlond, heavy duty.  
22"x10' Davis q. c. gear.  
26"x10' Bridgford q. c. gear.  
26"x12' Bridgford q. c. gear.  
22"x22' screw cutting.  
3"x36" Jones & Lamson.

#### PLANERS.

24"x24"x 6' Pease.  
26"x26"x 5' Pease.

36"x36"x12' Pond, 2 heads.

#### STEAM HAMMERS.

600 lb. Bement-Miles.

1100 lb. Bement-Miles.

#### POWER PRESSES.

No. 61 Bliss.  
No. 2 inclinable.  
No. 6 Niagara inclinable.

No. 40 Swaine arch press.  
No. 42 Toledo horn press.

#### DRILLING MACHINES.

2-spindle Kern high speed.  
24" Henry & Wright high speed.

16" Elmore high speed.  
24" Baker Bros. heavy duty.

#### MILLING MACHINES.

No. 4½ Becker plain.  
No. 34 Oesterlein plain.  
No. 2 Rockford universal.  
No. 25 Becker plain.

No. 3 LeBlond plain.  
No. 3½ Owen plain.  
No. 2½ Rockford universal.

#### MISCELLANEOUS

Blower, No. 3 Root.  
Bolt cutter, 1½" Blakeslee.  
Bolt header, 1½" Blakeslee.  
Brake, 8' steel, No. 18 capacity.  
Brake 10' steel, No. 16 capacity.  
Bulldozer, No. 3 Fisher.  
Chucks, Hannifin air.  
Gear cutter, 26" Cincinnati.  
Grinder, No. 38 plowshare.

Grinder, 10"x30" Landis universal.  
Grinder, 12"x36" Landis universal.  
Punch, 24" throat Rock River, ¾ in ¼.  
Punch & sh. No. 1 L. & A., 24" tht.  
Punch, No. 2 Cleveland, sgl. 15" tht.  
Screw machine, P. & W., hand, 2".  
Screw machines, Warner & Swasey,  
hand, 2".  
Stampingmche, Noble & Westbrook.

## SECOND-HAND MACHINERY

### FOR SALE BY

**Badger-Packard Mch'y. Co., 133-139 W. Water St., Milwaukee, Wis.**

#### LATHES.

- 11"x4' Seneca Falls speed lathe t. & l. pulley, c. s.  
 12"x 6' Blaisdell, l. c. g., 4-st. c., d. g.  
 16"x 6' Cincinnati, q. c. g., 3-st. c., d. b. g., with c. s.  
 16"x 6' Prentice, l. c. g., 4-st. c., s. b. g., with equipment.  
 20"x 8' LeBlond, l. c. g., 4-st. c., s. b. g., with c. s.

#### MISCELLANEOUS.

- Drill, 4-sp. Barrsens. floor, style "A".  
 Drills, No. 2 Detroit 5-sp. semi-auto, horiz., with c. s.; no chucks or fixtures, (2).  
 Exhauster, planing mill, No. 40 Sturtevant, slow speed.  
 Feed water heater, 22"x69" Allis-Chalmers, Reynolds closed pat.  
 Gear cutter, Whiton.  
 Glue heater, steam 100 gal. Advance, Wetmore.  
 Grinder, No. 6 Besly disc, double spd., belt dr., with c. s.  
 Grinder, 72" Holmes auto. knife.  
 Grinder, 10"x20" Landis universal with equipment.  
 Grinder, Sterling univ. tool and reamer, complete univ. equipment, 95% new.  
 Miller, No. 10 Kemp Smith, hand.

- Grinder, Cleveland profile, with motor for a. c. or d. c.; used 30 days.  
 Miller, No. 1 Fox, hand, power feed, 95% new.  
 Oven furnace, No. 1 Stewart, with blower.  
 Pipe machine, 4" Armstrong, hand and power.  
 Planer, 24"x24"x16" Fitchburg.  
 Planer, 30"x30"x 8' Steptoe-McFarlane, single head, with c. s.  
 Punch, style M Badger, rapid action, 6" throat, 3"x3 1/2" cap.  
 Purifier, 30"x6" Buffalo, closed pat'n.  
 Rivet spinning machine, Grant, 110 v., d. c., motor driven, 3/16" cap.  
 Screw machine, 1 1/2"x17" Cleveland auto.  
 Screw mch., 1 1/2"x17" Hartford auto.  
 Steam pump, 5"x2 1/2"x6" Whittier duplex.

### FOR SALE BY

**Frank Toomey, Inc.,**

**127-131 N. Third St., Philadelphia, Pa.**

#### LATHES.

- 13"x 7' 6" new Carroll-Jamieson, plain change.  
 14"x 6' Neat, double back geared.  
 14"x 6' new Carroll-Jamieson, quick change.  
 15"x 6' new Sidney, quick change, swings 17".  
 16"x24" new Rahn-Larmon, double back geared, quick change.  
 17"x 8' new Sidney, quick change, swings 19".  
 19"x 8' new Sidney, quick change, swings 21".  
 25"x14" new Sidney, quick change, swings 27".  
 33"x12" Putnam.

#### TURRET LATHES.

- 24" Davis chucking. No. 1 Bardons & Oliver, screw.

#### VERTICAL BORING MILLS.

- 60" Bullard, two heads. 64" Niles. two heads.

#### PLANERS.

- 48"x48"x12' Hamilton, 2 heads, motor drive. 31"x23"x68" Smith, one head.  
 36"x36"x 8" Gray, two heads. 18"x 8"x 8' Wheeler, one head.

#### SHAPERS.

- 16" new Steptoe, b. g. 24" new Steptoe, b. g.  
 20" new Steptoe, b. g. 16" Barker, traveling head.

#### MILLING MACHINES.

- No. 4 Brown & Sharpe, plain. No. 6 Steptoe, hand, new.  
 No. 1 1/2 new American, plain. No. 1 United States, new, hand.

#### GRINDERS.

- No. 1 Landis internal. No. 1 Grand Rapids new cutter and reamer.

#### DRILLING MACHINES.

- 60" Bickford radial. 32" new Superior, sliding head.  
 48" Fosdick radial. 23" new Superior, sliding head.  
 36" new Superior, sliding head. 23" new Superior, sliding head.

## SECOND-HAND MACHINERY

### FOR SALE OR EXCHANGE BY

**Wm. P. Copping,** 316-18 N. St. Patrick St., New Orleans, La.  
STRAIGHTENING ROLL.

1 Hillis & Jones No. 1 Straightening Roll (7 rolls), in good running order; can handle plates No. 28 to 1", 62" wide; tight and loose pulley; price f. o. b. car New Orleans, \$3.50.

### FOR SALE BY

**Cleveland Belting & Mchy. Co.,** 1922 Scranton Rd., Cleveland, O.  
SPENCER ENGINEERING CO. MACHINERY

List of Machinery at the Spencer Engineering Co., Toledo, O.

Air chucks, with air cylinders and connections, (32).	Lathes, engine, 18" American, grd. hd., single pulley dr., 8' bed, (9).
Air hoist, 14" diameter, 8' lift.	Lathes, turret, 15" American, d.b.g., 8' bed, (14).
Air hoists, 8" bore, 8' lift, (2).	Lathes, turret, 18" American, grd. head, 8' bed, (11).
Air tanks, with valves & gauges, (2).	Miller, Gould & Eberhardt No. 4.
Annealing furnaces, 8'x32" Quigley, (2).	Oil pump, cap 5 gallon per minute.
Boring machine, 30" Baker, latest type.	Roller marking machines, (2).
Grinders, wet, Townsend, (14).	Shell spraying machines, (2).
Grinding jacks, various sizes, (3).	Shot blast machines, Gray, (3).
Hydraulic accumulator.	Steel tank, 3 bbl. 42x36x30 deep.
Hydraulic banding presses, (2).	Steel tank, 10 bbl., 5x8x3'4", steam jacketed.
Hydraulic pump.	Thread millers, Smalley-General, equipped with air chucks, air cylinders and valves, (10).
Lathes, engine, 16" American, d.b.g., 6' bed, (22).	Tool hardening furnace.
Lathes, engine, 18" American, d.b.g., 6' bed, (21).	

There is also in this plant a large quantity of pulleys, all sizes, line shafting, hangers and belting of all descriptions. Also a large stock of tool room and stock room supplies.

### FOR SALE BY

**The O'Brien Machinery Co.,** 119 N. Third St., Philadelphia, Pa.

Boring and turning lathes, 26"x10' Walter Scott, 2-step cone, d. b. g., 5" belt; some fitted with turret on carriage, six 3" holes in turret; turning lathes swing 5' 4" between centers, 22" over carriage; price low for quick sale; photo and complete specifications on request, (12).

Bolt cutter, 14" Acme, with Landis head.

Drill, 4 spindle Barr sensitive.

Drill, 22" Cincinnati Bickford, sliding head.

Lathe, 8"x108" Fitchburg Low Swing.

Lathes, 26"x12' Bridgeford, heavy duty, (4).

Lathe, 35"x15' Bement.

Milling machine, No. 1 Dow plain.

Miller, No. 1 Garvin universal, vertical attachment.

Milling machine, No. 3 Becker vertical.

Pipe machine, 6" Jarecki.

Planers, 30"x30"x10' Sellers.

Press, DGG-55 Ferracute, long stroke.

Punch and shear, single end, capacity 1" in 1/2", new.

Punch and shear, double end, capacity 1/2" in 1/2", new.

Radial drill, 26" Mueller plain.

Shaper, 16" Hollingworth, back geared.

Turret lathes No. 24 Garvin, wire feed, (2).

Turret lathe, 24" Gisholt horizontal.

Turret lathes, No. 41 Bardons & Oliver, (2).

Turret lathes, No. 5 Bardons & Oliver, (2).

## SECOND-HAND MACHINERY

### FOR SALE BY

**Peninsular Machinery Co., 281 E. Jefferson Ave., Detroit, Mich.**

Drill, 10" Hoefler, friction disc.  
 Drill, 20" Rockford, back geared.  
 Drill, 23" Rockford, back geared.  
 Drill, 24" Rockford, sliding head.  
 Drill, 24" Fosdick radial.  
 Drill, Pierle high spd. ball bearing  
 Grinder, No. 1 LeBlond univ. cutter  
 Grinder, No. 2 Grand Rapids, drill  
 and tool.  
 Grinder, No. 1 Blount, emery  
 Grinder, No. 6 Blount, d. e. emery.  
 Groover, No. 3 Niagara.  
 Lathe, 11" x 4' Blount speed  
 Lathe, 14" x 6' LeBlond engine.  
 Lathe, 16" x 6' LeBlond engine.

Lathe, 17" x 8' LeBlond rap. produc.  
 Lathe, 17" x 10' LeBlond automobile.  
 Lathe, 18" x 8' LeBlond engine.  
 Lathe, 18" x 8' LeBlond engine, quick  
 change gear, motor drive.  
 Lathe, 20" x 10' LeBlond engine.  
 Lathe, 25" x 12' LeBlond engine, h. d.  
 Lathe, 30" x 16' Pond.  
 Miller, No. 24 LeBlond universal.  
 Miller, No. 3H LeBlond universal.  
 Planer, 24" x 24" x 6' Rockford, agl. hd.  
 Planer, 30" x 30" x 18, Rockford, 2 hds.  
 Planer, 54" x 54" x 30' Betts heavy pat-  
 tern, reversing motor drive.

### FOR SALE BY

**W. J. Balrd Machinery Co., 265 Jefferson Ave., E., Detroit, Mich.**

Boring mill, No. 1 Lambert horizontal, 3" bar, new.  
 Boring mill, 30" Gisholt vertical, used.  
 Boring mill, 30" Bullard vertical, used.  
 Boring mill, 42" Bullard vertical, used.  
 Grinder, No. 1 Security internal, new.  
 Grinder, No. 1 Wilmarth & Morman universal, new.  
 Grinder, No. 3 Wilmarth & Morman surface, new.  
 Grinder, No. 1 Fraser universal, new.  
 Grinder, No. 2 Fraser universal, new.  
 Grinder, No. 2 Bath universal, used.  
 Grinders, No. 2 La Salle automatic surface, new (2).  
 Lathes, 14" x 6' Filsmith, double back geared, new, (2).  
 Lathes, 25" x 12' Sidney heavy duty, new, (2).  
 Lathe, 15" x 6' Crawford tool room, new.  
 Lathes, 16" x 8' Bradford, tool room, new, (2).  
 Lathes, 18" x 8' Bradford, q. c., dbl. b. g., new, (2).  
 Lathes, 6" x 30" type B-4 Dalton bench, new, (8).  
 Lathes, No. 3 Ideal precision bench, new, (4).  
 Lathes, No. 4 Stark precision bench, new, (2).  
 Milling machine, No. 3 Cincinnati vertical, new.  
 Milling machines, No. 2 Rockford high-powered, plain, new, (2).  
 Millers, No. 1 Rockford hand, new, (3).  
 Millers, No. 1 U. S. hand, new, (3).  
 Planer, 22" x 22" x 5' Wheeler, one head, used.  
 Planer, 48" x 48" x 14' Pond, two heads, used.  
 Planer, 36" x 36" x 12' American, one head, used.  
 Planer, 60" x 60" x 12' Pond, three heads, used.  
 Shaper, 20" Columbia crank, new.  
 Shaper, 7" No. 1 Rhodes horizontal crank, new.

## HOW

—can our advertisers know that your inquiry comes from Hitchcock's List unless you tell them? When writing them, won't you kindly say that you saw it in Hitchcock's? That will be sufficient.

# Reliabuilt Machine Tools

## IMMEDIATE SHIPMENT

- 1 8' BETTS Vertical Boring Mill, 2 Swivel Heads.
- 1 8' POND Vertical Boring Mill, 2 Swivel Heads.
- 1 62" COLBURN Vertical Boring Mill, two swivel heads, complete.
- 1 42" BEMENT Vert. Bor. Mill, two swivel hds., complete.
- 1 42" NILES Vert. Bor. Mill, one tur. hd. one swivel hd.
- 1 NEWTON Boring Mill, "Horizontal."
- 15 NEW 36" BULLARD Era Type Vertical Boring Mills.
- 1 34" KING Boring Mill, turret head.
- 1 52" BULLARD Boring Mill, two swivel hds., gr. feed.
- 1 No. 1 LUCAS Precision Boring Mill.
- 2 No. 1½ KEARNEY & TRECKER Universal Miller.
- 1 No. 4 CINCINNATI Plain Miller, complete.
- 1 42" x 20" x 20" INGERSOLL SLAB miller, two vertical, two horizontal heads
- 1 No. 3-B OWEN Plain Miller, vertical attachment.
- 1 No. 24 OESTERLEIN plain Miller, complete.
- 1 No. 3 CINCINNATI Universal Miller, complete.
- 1 BAUSH Eight Spindle Drill, gear feeds.
- 1 7' 3" WARREN Radial, motor or belt drive.
- 1 6' BICKFORD Full Univ. Radial, single pulley drive.
- 3 6' PRENTICE Radials, single pulley drive.
- 1 6' NILES Radial, motor drive.
- 1 5' BAUSH Radial, cone drive.
- 1 4' 6" BICKFORD Radial, complete.
- 1 3' 6" BICKFORD Radial, complete.
- 1 3' DRESES Plain radial.
- 1 96" x 72" x 25' SELLERS Planer, four heads.
- 2 48" x 48" x 12' HAMILTON Planers, 2 hds., art. for 4.
- 1 10' x 10' x 20' POND Planer, four heads.
- 1 36" x 36" x 16' FLATHER Planer, two heads.
- 1 36" x 36" x 8' POND Planer, two heads.
- 1 36" x 36" x 10' CINCINNATI Planer, 2 hds., complete.
- 3 NEW 42" x 42" x 12' OPENSIDE Planers, two heads.
- 9 2¼" GRIDLEY Four Spindle Automatics, complete.
- 1 No. 5 BROWN & SHARPE Universal Grinder.
- 1 No. 59 TOLEDO Straight Side Geared Press.
- 1 No. 46 BLISS Straight Side Geared Press.
- 3 26" x 10' LODGE & SHIPLEY Lathes, late type.
- 6 18" x 8' LODGE & SHIPLEY Lathes, late type.
- 38 20" x 8' AMERICAN High Duty Q. C. G. Lathes.
- 1 40" x 24' FIFIELD Lathe, triple geared.
- 1 NEW 17" SIMMONS Shaper, complete.
- 1 20" CINCINNATI High Duty Shaper.
- 1 5-ton WHITING Pneumatic Crane, 37½' span. Double Fish Belly Type.
- 1 84" GOULD & EBERHARDT Gear Hobber.

**Simmons Machine Co., Inc., Albany, N.Y.**

1001 Singer Bldg., N. Y., 358 Ellicott Square, Buffalo

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## Hammers

### 250 Ton Mesta Steam Hydraulic Quick Acting Forging Press

1500-lb. Bliss, board drop.

1500-lb. United Engineering Co., board drop.

800-lb. Merrill, board drop.

300-lb. Bradley, helve.

80-lb. Bradley, helve.

80-lb. Yeakley, pneumatic.

## Punches and Shears

Betts Punch, 20" gap, capacity 1" thru 1".

Cleveland Punch, 19" gap, capacity 1" thru 1".

Henry Pels Coping Machine, armor plate, capacity 10" beam.

Bement Horizontal Punch, 60" gap, main gear 72"x7"; weight about 30,000 lbs.; capacity 1 1/2" thru 1 1/2".

## Presses

No. 512 Bliss, 35 tons working pressure.

No. 540 Max Ams, geared, weight 6,000 lbs.

D4 Ferracute, roll f., wt. 6,000 lbs.

No. 1 Bliss, st. sided, geared, 14" str.

No. 6 Farrel st. sided, geared, 5" str.

No. 81 Ferracute, geared, 3" stroke.

## Vertical Boring Mills

14' Standard, 2 swivel heads.

10' Hilles & Jones single head.

90" Pond, 2 swivel heads.

72" Bement, single head.

60" Niles-Bement-Pond, 2 swivel

heads—heavy, latest.

38" Baush, 2 swivel heads.

38" Bullard, 2 swivel heads.

## Milling Machines

No. 3 Hendey plain, geared feeds.

No. 2 Hendey plain.

No. 2 1/2 Garvin universal.

Hilles & J. vert. 24" rotary table.

Newton vertical, heavy duty, 36" cutter head.

Brainard slab miller, 76"x36"x12" housings adjustable to 64".

## Radial Drills

6' Bickford semi-univ., sgl. pulley dr.

5 1/2' Niles, univ., box table, etc.

5' Baush, motor driven.

3 1/2' Gang, box table, etc.

## Planers

60"x48"x20' Gleason, 3 heads.

48"x36"x16' Detrick & Harvey, open side, 3 heads.

48"x36"x10' Ohio, 2 heads.

42"x42"x12' Pond, 2 heads.

36"x36"x12' CINCINNATI TWO HEADS, HEAVY TYPE.

20"x30"x14' Flather, 2 heads.

## Lathes

52"x22' Woodlite, triple geared, face plate drive, etc.

50"x16' Fifield.

48"x20' Gleason.

42"x21' New Haven.

28"x12' Fay & Scott.

Five(5) Fay Automatic Lathes, 22" swing, 6' bed.

20"x8' Lodge & Shipley, geared hd.

16"x8' Reed Prentice, new, latest type

## Slotters

30" Bullard draw cut.

Ames Combination Drill and Slotter, drills 54", slots 20".

10" New Haven, circular table.

Morton Portable, 6' stroke, 12' travel of head on base.

## Grinders

No. 5 Bath Duplex complete, good as new.

No. 2 1/2 Bath Universal, complete.

Hammett vertical, internal and external, complete.

No. 3 Brown & Sharpe, surface table 14"x80".

Two (2) No. 50 Gardner Disc Grinders, good as new.

**NOTE—We have over 500 MACHINES to select from, all at our warehouse ready for immediate delivery, condition guaranteed.**

## Graves Machinery Exchange

Warehouse and R. R. Siding:  
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Offices: Suite 482  
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## Partial List—

### USED

#### Boilers.

- 2—500 h. p. 130 lb. w. p. each...\$3500.  
1—350 h. p. 130 lb. w. p. B. & W. 2750.  
4—100 h. p. 100 to 140 lb. w. p.,  
h. r. t. ....Application.

#### Compressors.

- 1—6x4x7—40 ft. Clayton, pwr...\$ 200.  
1—13x14x12x12 Craig, steam... 1000.  
1—8x8 Curtis, dbl. cyl., power... 500.

#### Drilling Machines.

- 1—Garvin 4 spindle, old style...\$ 50.  
1—Garvin 6 spindle, old style... 60.  
1—8 spindle Baush... 1600.  
1—24" Barnes, back geared... 200.  
1—15" Barnes, plain... 80.  
1—4" Cincinnati radial... 750.  
1—4" Machine Tool Works... 500.  
1—42" Machine Tool Works... 800.  
31—Other Drill Presses—Various Makes and Sizes, Application

#### Engines.

- 1—50 h. p. 12x12 Watertown...\$2000.  
1—60 h. p. 10x16 Atlas... 600.

#### Exhausters.

- 2—No. 3 Buffalo, each...\$ 40.  
1—No. 4 Buffalo... 50.  
2—No. 7 Sturtevant, each... 150.  
1—No. 9 Sturtevant... 150.

#### Eye Bender.

- 1—Williams & White, hvy. type\$ 900.

#### Grinders.

- 64—Grinders, Various makes and Sizes...Application

#### Screw Machines.

- 3—No. 1 Foster, No Turret, Slide or Saddle, each...\$ 200.  
1—No. 2 Foster, No Turret, Slide or Saddle, each... 250.  
3—No. 4 Foster, Complete, No Wire Feed, each... 600.  
4—No. 5 Foster, Complete, No Wire Feed, each... 600.  
20—No. 5 Foster, Complete, With Wire Feed, each... 650.  
14—No. 10 Foster, Complete, With Wire Feed, each... 900.

#### Hammers.

- 1—No. 201 David Bell, steam...\$ 500.

#### Heaters.

- 1—No. 8-0-1 Webster, vacuum...\$ 100.

#### Lathes.

- Fifield—We are the manufacturers of Fifield Lathes—prices and description on...Application  
1—18"x8" Niles, engine...\$ 350.  
1—14"x8" Barnes... 175.  
1—21"x8" Lodge & D., engine... 475.  
1—28"x16" Wright, engine...\$ 850.  
1—52" Niles tire lathe... 3500.  
1—80" Niles tire lathe... 4500.  
1—No. 2 Niles double axle... 1200.  
2—30"x12" Lodge & Shipley, geared head, each... 2400.

#### Planers.

- 1—12"x12"x24" power feed...\$ 300.  
1—24"x24"x 8' Old type... 275.  
1—36"x36"x10' P. & W... 325.  
1—40"x40"x 8' P. & W... 500.  
1—38"x44"x12'6" P. & W... 600.  
1—24" Lane endless bed (wood) sectional roll & chipbreaker 400.

#### Pumps.

All styles and sizes.

#### Saws.

- 1—No. 3 Burr cold saw...\$ 200.  
1—12" Burr cold saw... 75.

#### Shapers.

- 1—15" Gould & Eberhardt...\$ 325.  
1—15" Lodge & Davis, pl. crank 450.  
1—16" Flather... 600.

## NEW MACHINES

We carry in stock a large Assortment of Machine Tools, Air Compressors, Pumps, Blowers



# Look Over This Exceptional List

## First Class Machine Tools

### Immediate Delivery

- 1-33"x33"x10' Knecht (Bickett) Planer, 4 heads.
- 1-24"x24"x 6' Gray, 1 head.
- 1-36"x36"x24' Pond Planer, double head.
- 1-37' American Vertical Boring Mill, 2 heads.
- 1-No. 1 Cleveland Horizontal Mill, 2½" bar.
- 1-Warner & Swasey Horizontal Mill, 2½" bar.
- 1-38"x20' New Haven Engine Lathe, c. r.
- 1-Heavy Beveling Shear, capacity ¾" plate.
- 1-350 ton Niles Hydraulic Wheel Press, 84" capacity.

### RADIAL DRILLS.

- 1-6' Niles plain, motor drive, \$1450.
- 1-5' Niles plain, \$450.
- 1-36" Prentice, plain gear box.
- 1-48" Prentice, belt drive to spindle.
- 1-Heavy duty Baker drill, g. b. drive, Style 2 M.

### AUTO. TURRET LATHES.

- 1-3" P. & W., geared head.
- 1-2x24 J. & L., geared head.
- 1-3x36 J. & L., geared heads.
- 1-2"x24 Pratt & Whitney, grd. hds.
- 1-2" Cleveland automatic, 5 hole.
- 1-14" W. & S. Turret.
- 3-Hand screw machines, 1" cap.

### AIR COMPRESSORS.

- 1-13"x8"x12" Curtis vert. dbl. cyl.
- 1-No. 0 Auto garage compressor.
- 1-12"x10" Ingersoll-Rand.

### SHAPERS.

- 1-14" Steptoe, geared.
- 1-18" Hollingworth, new.
- 1-18" Hollingworth, b. g. crank.
- 1-20" Smith & Mills, b. g. crank.

### GRINDERS.

- 2-10"x30" Landis, plain.
- 1-6"x48" Pratt & Whitney, plain.
- 1-10"x24" Landis, plain.
- 1-14" P. & W. vert. surface grinder.
- 2-No. 1 Cincinnati universal tool.
- 3-No. 1 Cincinnati plain tool.
- 2-Woods plain tool.

### MILLING MACHINES.

- 1-No. 14 Valley City universal.
- 1-No. 42 Oesterlein plain.
- 1-No. 4 Cincinnati plain.
- 1-No. 14 Oesterlein universal.
- 1-No. 3 Cin'ti plain, s. p. drive.
- 1-No. 1 Y Brown & Sharpe.
- 1-No. 10 Pratt & Whitney, hand.
- 3-No. 0 Owen plain, new.

### ENGINE LATHES.

- 1-13"x5'6" Carroll-Jamieson, s.q. c.
- 1-14"x6' Lodge & Shipley, qck. ch.
- 1-14"x6' Flatler, loose change.
- 1-14"x8' Von Wyck, taper attach.
- 1-16"x8' Flatler, loose change.
- 1-17"x8' Greaves-Klusman.
- 5-17"x8' National, quick change.
- 6-18"x8' Milwaukee, semi qck. ch.
- 1-18"x10' Chard, semi qck. change.
- 1-18"x10' Boye & Emmes, q. c.
- 1-20"x12' Monarch, h. s., c. r.
- 1-21"x8' LeBlond, quick change.
- 1-33"x20' New Haven.
- 2-21"x10' LeBlond, heavy duty.
- 1-25"x10' LeBlond, heavy duty.

### GEAR CUTTERS AND HOBBSERS.

- 1-No. 6 Lees Bradner auto.
- 1-24" Schuchardt & Schutte.
- No. 3 Brown & Sharpe, 26" capacity.

### MULTIPLE DRILLS.

- 1-4 Spindle Barnes, 22", b. g. & p. f.
- 1-3 Spindle sen., Taylor & Fenn.
- 6-24" Drills, single head.
- 1-40" Cincinnati, tapping attach.

### WRITE-WIRE-PHONE

**Broadway Machinery Company**  
236-238 Broadway      Cincinnati, Ohio

# THE MOTCH & MERRYWEATHER MACHINERY CO

707-715 Lakeside Ave., N. W., Cleveland, Ohio  
BRANCHES: DETROIT, CINCINNATI, PITTSBURGH

Practically New and at Pre-War Prices. Surplus Equipment of the  
Lincoln Motor Co., Manufacturer of Liberty Airplane Motors

## GRINDERS.

- 6 No. 18 Bryant Internal.
- 6 No. 1½ Cincinnati Cutter and Tool
- 6 4-spindle Foote-Burt Valve.
- 12 No. 60 Heald Cylinder.
- 6 10x50" Norton Plain.

## MILLING MACHINES.

- 7 Type "A" Briggs.
- 6 10" Pratt & Whitney Automatic.

- 4 No. 15 Garvin Plain.
- 1 No. 22 Garvin Vertical.
- 2 Pratt & Whitney Spline.
- 10 No. 6 Wilson

## BROACHING MACHINES.

- 2 No. 0 J. N. Lapointe.

## LATHES.

- 3 9"x12" Sundstrand Mfg., Stud.
- 4 16"x10" Rahn-Larmon.
- 10 21"x10" South Bend.
- 2 24"x10" Lodge & Shipley, Selective Hd.

## SCREW MACHINES.

- 2 No. 2 Smurr & Kamen 2" capacity.

## TURRET LATHES.

- 6 2¼"x26" Cincinnati Acme Plain.
- 10 3¼"x26" Cincinnati Acme Plain.

6 10" Pratt & Whitney Automatic.

4 No. 15 Garvin Plain.

1 No. 22 Garvin Vertical.

2 2" Pratt & Whitney Spline.

10 No. 6 Whitney Hand.

2 No. 2 Smurr & Kamen 2" capacity.

### TURRET LATHES.

6 2¼"x26" Cincinnati Acme Plain.

10 3¼"x36" Cincinnati Acme plain.

## Few Additional Machines Here in our Used Machinery Dept.

### GEAR CUTTERS.

1 No. 3-26" Brown & Sharpe.

2 36"x9" Gould & Eberhardt Horiz. Type.

1 No. 2 Whiton Automatic.

### TURRET LATHES & SCREW MCHS.

6 3¼"x36" Acme.

4 2¼"x26" Acme.

1 No. 7 Bardons & Oliver.

1 ¾"x½" Plain Cleveland.

1 2" Cleveland.

1 1"x7" Acme.

### LATHES.

4 16"x 8' Lodge & S., G. H., taper att.

1 16"x 8' Monarch.

1 20"x 8' Bradford.

1 22"x14' Niles.

1 30"x14' Pond.

2 30"x18' American.

2 9"x12' Sunstrand.

1 18" double head Greaves & Klusman.

4 21"x10' South Bend, (new).

### PISTON RING MACHINES.

3 Plain Gridleys.

2 Eccentric Gridleys.

2 No. 2-P Potter & Johnston, (plain).

2 No. 2-P Potter & Johnston, (eccentric).

### AUTOMATIC MILLERS.

2 10" Pratt & Whitney.

### BORING MILLS.

1 36" Bullard Vertical Turret Lathe.

### GRINDERS.

1 26" Blanchard Vertical Floor M. D.

5 No. 18 Bryant Chucking Grinders.

1 Garrigus Ring.

3 14x72 Norton Plain Grinders.

5 16x72 Norton Double Head 7in.

1 12x96 Landis Plain.

3 No. 60 Heald Cylinder Grinders.

3 No. 1½ Landis Grinders.

1 No. 2 Brown & Sharpe Universal.

### **NEW MACHINES IN STOCK**

20" Ohio Shaper.  
No. 1 Toledo Hand Milling Machines.  
25" Snyder Sliding Head Drill Press.  
No. 1 Kempsmith Universal Milling Machine.  
No. 1 Wilmarth & Morman Universal Grinder.  
10x30 Webster & Perks Universal Grinder.  
No. 0 Bickett Profiling Machine.  
No. 32-B Demco Floor Type Drill Presses, two and three-spindle.  
23" Demco Floor Type Drill.  
Webster & Perks Nos. 1 and 2 Floor Type Grinders.  
No. 2-B Washburn Shops Drill, two-spindle.  
No. 2 Garvin Screw Slotting Machine.  
No. 2 Grand Rapids Universal Grinder.

### **USED MACHINES IN STOCK**

No. 7 Foster Hand Screw Machines.  
12x24 Modern Plain Grinder; No. 14 Bealy Disc Grinders.  
18x8 Greaves & Klusman Lathe.  
No. 2-26" and No. 3-36" Brown & Sharpe Gear Cutters.  
No. 1 Wilmarth & Morman Surface Grinder.  
12"x6" and 24"x12" Gould & Eberhardt Gear Hobbers.  
No. 1 Warner & Swasey Hol. Hex. Turret Lathe, bar & chucking.  
No. 3-A Warner & Swasey Hol. Hex Turret Lathe.  
No. 1 Brown & Sharpe Automatic Screw Machine.  
No. 2 Bardons & Oliver Turret Lathe.  
No. 1 two-spindle Garvin Tapping Machine.  
2x24 and 3x36 Jones & Lamson Turret Lathes.

## **The Biggs-Watterson Co.**

Cleveland, Ohio. Branches: Dayton, Ohio; Detroit, Mich.

# **WANTED QUICK**

## **Second-Hand Machine Shop Tools**

**OR A**

## **Complete Machine Shop**

## **Will Pay Cash On Sight**

*Send us a complete list or inventory  
together with your lowest price*

## **FRANK H. PARKER COMPANY**

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# Our Guarantee

## Money Back if Not Satisfied

### Pipe Machines

- 1—No. 306-B Oster Pipe Machine, capacity  $1\frac{1}{2}$ " to 6"; arranged for motor dr.
- 1—Williams No. 1 Pipe Machine; capacity  $\frac{1}{2}$ " to 2"
- 1—No. 38 Forbes Hand Machine; capacity  $1\frac{1}{2}$ " to 4"

### Grinders

- 1—No. 2-A Landis 6x32 Universal Grinder.
- 1—Norton Universal Cutter and Tool Grinder, complete with countershaft and one lot of equipment.
- 2—Gardner No. 120 Double Disc Grinders.
- 1—C2T Grand Rapids Drill Grinder, capacity  $\frac{1}{2}$ " to  $2\frac{1}{2}$ ".
- 1—New Yankee Drill Grinder; capacity  $3/32$ " to  $1\frac{1}{2}$ ".
- 1—Each Nos. 1, 2 and 3 Woods Univ. Tool & Cutter Grinders, complete, (new).

### Millers

- 2—No. 1 $\frac{1}{2}$  American Plain Milling Machines, (new).
- 1—No. 2-B Rockford Universal Milling Machine, (new).
- 2—No. 6 Bickett Vertical Profilers and Millers.
- 2—U. S. Hand Millers.
- 1—No. 1 Knight Milling and Drilling Machine.
- 1—No. 2 American Plain Miller.

### Lathes and Turrets

- 2—24" Gisholt Lathes, chucking equipment, taper attach.; modern machines.
- 1—24"x14' Thayer & Houghton Lathe.
- 1—Each New Sidney Heavy Duty Lathes, 15", 17", 19", 25" and 27" swing by 6', 8', 10', 12' and 14' beds; all 3-step cone, d. b. g., q. c.
- 1—Each New Sidney 14", 16" and 18" swing by 6', 8' and 10' beds; standard lathes; all 3-step cone, d. b. g., q. c.
- 2—14"x6' Flather & Co. Lathes.

### Drills—Radials and Multiples.

- 1—4' Universal Radial Drill.
- 1—No. 30 Natco 34-spindle Multiple Drill.
- 1—Bausch 12-spindle Multiple Drill, equipped for 24 spindles; weight 30,000 lbs.; capacity  $\frac{1}{2}$ " to  $1\frac{1}{2}$ ".
- 2—24"—28" Hoefler, s. h., b. g., p. f. Drills.
- 1—22" Barnes Sliding Head, b. g., p. f. Drill.
- 3—20" Barnes Wheel and Lever Feed Drills.

### Punches and Shears

- 1—No. 2 Royersford Double End Punch and Shear;  $7\frac{1}{2}$ " throat; capacity to punch  $\frac{1}{2}$ " thru  $\frac{1}{2}$ ".
- 1—No. 11-B Badger Alligator Shear; capacity 6"x $\frac{1}{2}$ " flat,  $1\frac{1}{2}$ " round iron.

**Send for our 48-page Catalog No. 200—includes over 1000 machines in our own warehouse under one roof**

**Wayne Machinery Company**  
**Fort Wayne, Indiana**

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## Second Hand Machinery

### DRILLING MACHINES.

Demco bench drills, new, (6).  
 18" Baker stationary head, hand lever and power feed.  
 No. 117 Moline heavy single spindle, (2).  
 No. 66-D Moline rail drill, floor type, 36" rail, 8 heads, good as new.

### ENGINE LATHES.

13"x 8' Champion, with draw chuck and collets.  
 14"x 6' Smurr & Kamen.  
 18"x 6' Imperial chucking lathe with turret.  
 21"x10' LeBlond crankshaft lathes, good condition, (2).  
 30"x10' Fifield, compound rest.  
 32"x16' Fay & Scott, compound rest, tur. on shears, turret tool post.

### MILLING MACHINES.

No. 12 Brown & Sharpe, hand miller. | No. 2 Kempsmith plain.  
 | No. 2 Hendey die sinker.

### TURRET LATHES.

1" Smith turret lathe.  
 14" Gray, 18" swing, back geared, (2).  
 3" Jones & Lamson flat turret, with bar equipment.

### SHAPERS.

14" Lodge & Davis. | 28" Steptoe, shifting belt.  
 24" Walcott.

### MISCELLANEOUS.

Gear cutter, 48" G. & E., spur. | Planer, 36"x36"x12' Gray, 2 hds.

**Marshall & Huschart Machinery Co.**

17 S. Jefferson St., Chicago, Ill.

## Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.

# New Machinery For Sale

In Stock at Chicago and New York

## Lathes

26"x12' Wickes, q. c. g., d. b. g.  
24"x13' Chard, q. c. g., d. b. g.  
24"x10' Advance, q. c. g., d. b. g.  
20"x11' Chard, q. c. g., d. b. g., (2).  
20"x9' Chard, q. c. g., d. b. g.  
18"x9' Chard, q. c. g., d. b. g., (5).  
18"x8' Advance, q. c. g., d. b. g.  
16"x9' Chard, q. c. g.  
16"x8' Cisco, q. c. g.  
16"x8' Cleveland, tool room.  
16"x7' Chard, q. c. g.  
16"x6' Cleveland tool room, (3).

14"x6' Amtew, d. b. g.  
13"x6' Lancaster.  
12"x4' 6" Cleveland precision, (4).  
12"x5' 6" Davis tool room, (2).  
12"x4' 3" Shepard.  
11"x5' Hudson.  
11"x4' No. 100 Wells, speed lathe.  
6"x30" Dalton bench lathe.  
4"x5' Elgin precision bench lathe.  
No. 54 Sloan & Chase bench lathe.  
Full line, Rivett precision bench lathes.

## Drilling Machines

4 1/2' Morris plain radial.  
4' Western heavy pattern plain.  
3' Western manufacturing radial.  
3 1/2' Canedy-Otto radial, (3).  
36" Snyder traveling head.  
32" Cleveland sliding head, (3).  
28" Cleveland sliding head, (3).  
25" Cleveland, upright.  
23" Silver sliding head.  
23" Snyder upright (8).  
22 1/2" Cleveland upright, (5).

21" Cleveland upright, (9).  
20" Canedy-Otto, upright, (4).  
20" Wisconsin, all-g geared.  
20" Milwaukee, lever feed, (2).  
Nos. 1, 2 & 3 spdl. Detroit, h. s., b. b.  
Nos. 1, 2 & 3 spdl. Demco, h. s., b. b.  
2 spindle Cleveland, h. s. b. b.  
14" U. S. sensitive.  
Belt driven bench.  
Motor driven bench.  
Portable electric.

## Milling Machines

No. 2 Cleveland universal, (6).  
No. 2 Cleveland, plain.  
No. 2-A Fox universal, (2).  
No. 2-B Fox plain, (3).

Nos. 1-A, 1-B and 0-B Fox plain.  
No. 9 Steptoe hand miller.  
No. 1 U. S. hand miller.  
No. 3 Becker standard vertical.

## Grinders

No. 3 Modern universal, (2).  
No. 3 Wilmarth & Morman surface.  
No. 2 Reid surface, (2).  
Hartford improved surface.  
24" Milwaukee wet tool.  
Cleveland profile.  
No. 1 Norton cutter and tool.

No. 1 Grand Rapids, cutter and tool.  
Grand Rapids drill—various sizes.  
Yankee drill—various sizes.  
5x18 Ott plain.  
Partridge floor stand—various sizes.  
Portable electric.  
Full line Rivett precision internal.

## Miscellaneous

Arbor presses, Atlas, all sizes.  
Filing machine, Nos. 2 & 3 Barry.  
Gear hobbers, No. 3 Farwell, (2).  
Hack saws, Peerless, 6x6, 9x9 & 13x16  
Hack saw, No. 1 Racine.  
Planer, 36x30x8' Gorton.  
Punch press, style B Rockford.  
Punch press, No. 1 Rockford.  
Punch and shear, No. 12 Beloit.

Punch press, No. 4 Rockford, fly-wheel.  
Shaper, 16" Walcott.  
Shaper, 18" Barker.  
Shaper, 20" Walcott.  
Shaper, 20" Milwaukee.  
Shaper, 24" Milwaukee.  
Shaper, 24" Barker.  
Full line Pexto Tinnars' Tools.

## USED MISCELLANEOUS

Drilling and tap'g mche., Murchey.  
Grinder, tool post.

Shaper, 20" Rockford.  
Turret lathe, 24" Steinle.

# Dale-Brewster Machinery Co., Inc.

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## Here's a Good Place to Make Selection Of Your Used Equipment

These represent but a small portion of our stock

### DRILLING MACHINES.

Western 8 spdl., adjustable hd.  
American 2' plain radial.

Allen 6 spindle b. b. sensitive.  
Avey No. 1 h. s. bench, agl. spdl.

### GRINDERS.

LeBlond No. 1 univ., power fd.  
Fraser No. 1, 8"x20" universal,  
convertible type.

B. & S. No. 2 univ., cap. 12" dia.  
Norton No. 1 plain, t. d. and disc  
grinding attachment.

### MILLING MACHINES.

Garvin No. 13 plain, cone drive.  
Becker No. 4-B vertical, c. s.,  
wrenches, etc.

Becker No. 25 plain, latest type,  
like new.  
Garvin No. 11 pl., equal to new.

### LATHES.

Monarch 16"x12', q. c. g., prac-  
tically new.  
McMahon 20"x8', c. r., s. b. g.

American 14"x7', s. b. g., taper  
att., d. i. att.  
Lodge & Shipley, 14"x5', q. c. g.

### MISCELLANEOUS.

Bardons & Oliver No. 0 Hand Screw Machine.  
Jones & Lamson 2"x24" Flat Turret, bar equipment, late pattern.  
Beaudry "Champion" 150 lbs. Power Hammer.  
Perkins No. 4 Screw Press, with new stand.

**LYND-FARQUHAR COMPANY,** Quality Machine Tools  
BOSTON, MASS.

## Grand Rapids Specials

Balancing machines, Rockford,  
bench, (6).  
Bolt cutter, 2" Acme.  
Boring mill, 34" vertical.  
Brake, No. 4 Chicago, hand.  
Compressor, 4"x5 Imperial, type  
12, (2).  
Drill, 26" Sibley, sliding head.  
Drill, 10-spindle Grand Rapids  
multiple.  
Electric welder, No. 140 Toledo.  
Flexible shaft, No. 5 Plank.  
Furnace, No. 4 Hardinge.  
Grinder, disc, 53" Besly No. 19.  
Grinder, drill, No. 2 Avey high  
speed.  
Grinder, drill, style B Yankee.

Grinder, universal, No. 2 Bath.  
Hack saw, No. 4 Monarch.  
Hammers, 100 lb. Little Giant,  
power, (2).  
Hammer, 250 lb. Little Giant,  
power.  
Lathes, 24"x5' South Bend, 36"  
gap, (4).  
Miller, No. 25 Becker plain.  
Miller, No. 37-B Chicago, small.  
Miller, No. 1-C Fox plain.  
Miller, No. 3 heavy, plain.  
Molding mch., portable, Arcade.  
Sand blast outfits, No. 6 Pang-  
born, (2).  
Shears, circle, No. 278 Waugh.

*Complete list on application*

**McMullen Machinery Company**

*"Everything in shop Equipment"*

**Grand Rapids, Mich.**

# Used Machine Tools

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- 1—5" bar Barrett Horiz. Boring Mill.
  - 1—42"x42"x26' J. S. Wheeler Planer.
  - 1—48"x30"x16' Gray Planer.
  - 3—2x24 Jones & Lamson Tur. Lathes.
  - 4—No. 2½ Avey Drills with tapping att.
  - 1—26"x18' Fifeild Engine Lathe.
  - 1—24"x14' Fifeild Engine Lathe.
  - 2—40" Cincinnati Drills, back gear.
  - 1—3' Bickford Radial Drill, cone drive.
  - 2—4' Bickford Radial Drill, cone drive.
  - 2—6' Bickford Radial Drill, cone drive.
  - 1—6' Bickford Radial Drill, speed box drive and taper.
- 
- 

**Vonnegut  
Machinery Company**  
Indianapolis, Ind.

# **"New York's Greatest Clearing House—J. J. McCabe Lathe & Machinery Corporation"**

## **Two 24-in. Slotting Machines**

"Niles-Bement-Pond" (Bement-Miles Works). Latest Standard Heavy Pattern Slotting Machines—24-in. Adjustable Stroke—complete with full equipment, including Westinghouse Motors—Built last year—absolutely like new—having seen but little service.

## **Two 48-in.x12-ft. Planers**

"Hamilton Machine Tool Co.'s" Heavy Latest Standard Pattern Iron Planers—48-in. wide—48-in. high, and Table 12-ft. long—fitted up with four (4) Heads—2 on rail—one each. Housing complete with Motors (Westinghouse). Built last year—Absolutely like new—and must be moved at once.

## **LATHES (Both New and Used)**

- 36"x20' 3-step cone, dbl. b. g., qk. change.
- 36"x18' 3-step cone, dbl. b. g., qk. change.
- 36"x16' 2-step cone, dbl. b. g., qk. change.
- 36"x20' 3-step cone, dbl. b. g., qk. change.
- 30"x18' 3-step cone, dbl. b. g., qk. change.
- 30"x16' 3-step cone, dbl. b. g., qk. change.
- 30"x14' 3-step cone, dbl. b. g., qk. change.
- 30"x14' triple geared, face plate drive.
- 29"x22' 3-step cone, dbl. b. g., qk. change.
- 29"x20' 3-step cone, dbl. b. g., qk. change.
- 29"x20' 3-step cone, dbl. b. g., qk. change.
- 29"x30' 3-step cone, d. b. g., qk. change, taper.
- 26"x16' 3-step cone, dbl. b. g., qk. change.
- 26"x16' grd. hd., sgl. pulley dr., qk. change.
- 26"x14' grd. hd., sgl. pulley dr., qk. change.
- 26"x14' 3-step cone, dbl. b. g., qk. change.

## **PLANERS**

- 24"x24"x 8' one head, G. A. Gray Co.
- 24"x24"x 8' one head, Woodward & Powell.
- 27"x27"x 8' one head, Woodward & Powell.
- 30"x30"x 6' one head, Pond.
- 30"x30"x 6' one head, G. A. Gray Co.
- 48"x48"x12' four heads, Hamilton, motor drive.
- 48"x48"x16' three heads, New open side.

## **MILLING MACHINES**

- No. 3 "Cincinnati" Plain (7 in stock).
- No. 2 Milwaukee, Universal, with complete equipment.
- No. 22 Brainerd Plain Table, 81"x14"
- Newton Plan, Horizontal and vertical head, Table 60"x12", Planer type Miller, 52"x48"x16", four heads.

## **SHAPERS**

- 7-12" stroke, Plain, Automatic vertical-feed to table.
- 6-14" stroke, Plain, Automatic vertical-feed to table.
- 3-18" stroke, Plain, Automatic vertical-feed to table.
- 5-16" stroke, Back-geared Automatic vertical-feed to table-sup.
- 4-20" stroke, Back-geared Automatic vertical-feed to table-sup.
- 4-25" stroke, Back-geared Automatic vertical-feed to table-sup.
- 3-30" stroke, Back-geared Automatic vertical-feed to table-sup.

## **BORING MACHINES**

- 27" Swing, Upright, Bullard, two heads.
- 27" Swing, Upright, Baush, two heads.
- 40" Swing, Upright, Brown & Sharpe, turret-heads.
- 8" Swing, Upright, Betts, two heads.

28"x30" 3-step cone, d. b. g., q. r., taper.  
 28"x16" 3-step cone, dbl. b. g., qk. change.  
 28"x16" gr. h. i., sgl. pulley dr., qk. change.  
 28"x14" gr. hd., sgl. pulley dr., qk. change.  
 28"x14" 3-step cone, dbl. b. g., qk. change.  
 21"x14" 3-step cone, dbl. b. g., qk. change.  
 21"x12" 3-at. p cone, dbl. b. g., qk. change.  
 21"x10" 3-step cone, dbl. b. g., qk. change.  
 21"x8" 3-step cone, dbl. b. g., qk. change.  
 18"x14" 3-step cone, dbl. b. g., qk. change.  
 18"x12" 3-step cone, dbl. b. g., qk. change.  
 18"x10" 3-step cone, dbl. b. g., qk. change.  
 18"x8" 3-step cone, dbl. b. g., qk. change.  
 16"x10" 3-step cone, dbl. b. g., qk. change.  
 16"x8" 3-step cone, dbl. b. g., qk. change.  
 16"x6" 3-step cone, dbl. b. g., qk. change.  
 14"x6" 3-step cone, dbl. b. g., qk. change.  
 14"x4" 3-step cone, dbl. b. g., qk. change.  
 Taper attachment can be furnished for any of these Lathes.

## McCABE "DOUBLE-SPINDLE" LATHES

26"-48"x14" motor driven, with General Electric Motor, like new.  
 26"-44"x18" belt driven, good order.  
 Complete capacity of two (2) Lathes on one bed, with double the thread-cutting and feeding range.

# J. J. McCabe Lathe & Machinery Corporation

## 149 BROADWAY

## BORING MACHINES

Upright and Horizontal

## TURRET LATHES

## RADIAL DRILLS

## GRINDERS

4-20" stroke, Hack-gear Automatic vertical-feed to table-swap.  
 4-25" stroke, Hack-gear Automatic vertical-feed to table-swap.  
 3-32" stroke, Back-screw-feed 5" and 8" Box, Single Pulley drive.  
 37" Swing, Upright, Bullard, two heads.  
 37" Swing, Upright, Baush, two heads.  
 49" Swing, Upright, Brown & Sharpe, turret-heads.  
 8" Swing, Upright, Betts, two heads.  
 14" Swing, Upright, Niles type, two heads.  
 Horizontal, 3" bar, Fitchburg, Knee type.  
 Horizontal, 9" bar, Lathe type.  
 Car-Wheel Borer, 14" Swing, Niles Tool Works.  
 29" Swing, Potter and Johnston, 3" hole.  
 29" Swing, Steidle, Gearing head, single pulley drive.  
 21" Swing, 32" Swing in gap, Gisholt.  
 28" Swing, Fond Kigid type, 4" hole, rapid traverse.  
 3x36 Jones & Lamson (2) with clucking equipment, sliding-head, single pulley drive.  
 3-24" arm, Cone-drive, tapping attachment.  
 2-24" arm, Speed-box drive, tapping attachment.  
 2-3" arm, Sensitive, tapping attachment.  
 6-34" arm, Speed-box drive, tapping attachment.  
 10-4" arm, Speed-box drive, tapping attachment.  
 1-44" arm, Semi-universal, Swivel arm, Heavy.  
 Universal Cutter and Tool Grinder, Cincinnati No. 1.  
 Universal, No. 2, Swings 12"x36" between full equipment.  
 Universal, No. 3, Swings 12"x40" between Brown & Sharpe.  
 Roll Grinder, Table 96"x8" and 44" between, Diamond.  
 Roll Grinder, Table 66"x12" and 36" between, Bridgeport.  
 Planer type Surface Grinder, 36" between housings, 8" table.

Also Complete Boiler Shop Equipment  
Now on Sale

Get Our List of Entire Stock—No. 305

**We have for sale:**

**20**

**Gooley & Edlund  
Briggs Millers**

**Excellent condition with  
arbor and countershaft**

**Table 24" long. Traverse 22".**

**Don't Delay**

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**J. L. Lucas & Son, Inc.,** No. 3 Fox St.,  
Bridgeport, Conn.

**Exceptional Value in Tools**

**New Or 98% New**

- 3-16x52 Landis Plain Self-Contained Grinders.
- 1-No. 2 Wilmarth & Morman Surface Grinder.
- 2-16x10 Blount Speed Lathes.
- 2-13x 6 Blount Speed Lathes.
- 2-16x12 Lodge & Shipley Lathes, with pan and pump.
- 1-20x12 Rahn-Larmon series B, Heavy Duty Lathe.
- 1-20x10 Greaves-Klusman Heavy Duty D. B. G. Lathe.
- 1-20x10 Greaves-Klusman Hvy. Duty Grd. Hd. Lathe.
- 1-3" Jones & Lamson Lathe, with chucking equipment.
- 1-21" Gisholt Lathe, motor drive, 220 volt motor.
- 2-16" Acme Universal Turret Lathes with chasing bar.
- 2-14x6 Walcott Double Back Geared Lathes.
- 1-20x8 Walcott Double Back Geared Lathe.
- 1-No. 4 National Screw Machine, friction head.
- 1-Canedy-Otto 3 1/2' Radial Drill.
- 1-Grant No. 81-A Riveting Machine.
- 2-16" Ohio Shapers, 1 Plain, 1 Heavy Duty.
- 2-20" Ohio Standard Duty Shapers.
- 1-24" Ohio Standard Duty Shapers.
- 1-24x24x8' Ohio Planer.

**The H. A. Smith Machinery Co., Inc.**  
501-505 East Water St.,                      Syracuse, N. Y.

# Re-MANUFACTURED - (ORIGINATED BY US) - MACHINE TOOLS

## Real Bargains

Every Re-Manufactured machine is being offered at real bargain prices. In fact, we can sell our Re-Manufactured tools, which compare favorably with new, at prices lower than those of the ordinary used tools.

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- 1-14" x 6' Reed Engine.
- 42-14" x 6' Reed, Ex. Hvy., Pl. Eng.
- 7-16" x 6' Reed Engine.
- 17-17" x 6' LeBlond Engine.
- 7-17" x 6' LeBlond Pl. Turning.
- 8-17" x 8' LeBlond Pl. Turning.
- 1-18" x 6' Reed Engine.
- 1-18" x 8' Reed Engine.
- 29-18" x 8' Boye & Emmes Engine
- 20-18" x 8' LeBlond Engine.
- 3-18" x 8' American Engine.
- 65-19" x 8' LeBlond Engine.
- 35-19" x 8' LeBlond Eng., P. F. T.
- 17-20" x 8' LeBlond Engine.
- 17-20" x 8' American Eng., P. F. T.
- 113-20" x 8' American Engine.
- 2-21" x 8' LeBlond Engine.
- 58-21" x 10' LeBlond Engine.
- 17-25" x 10' LeBlond Engine.
- 3-26" x 12' Wickes Engine.
- 33-26" x 10' Niles Engine.
- 3-26" x 12' Putnam Mtr. Driv. Eng.
- 75-26" x 10' Bridgeford Engine.
- 30-26" x 12' Bridgeford Engine.
- 16-26" x 14' Bridgeford Engine.
- 7-26" x 16' Bridgeford Engine.
- 10-26" x 18' Bridgeford Engine.
- 5-26" x 20' Bridgeford Engine.
- 9-30" x 11' American Gd. Hd. Eng.
- 4-30" x 20' American Gd. Hd. Eng.
- 23-32" x 12' Pittsburgh Engine.
- 6-40" x 12' Fifield Engine.
- 4-40" x 18' Fifield Engine.

### RADIAL DRILLS

- 3-3' American Sensitive.
- 1-3' Fosdick Plain.
- 1-5' Putnam.
- 1-5 1/2' Baush.

### TURRET & SCREW MCHES.

- 2-24" Steidle.
  - 14-No. 3-A Warner & Swasey.
  - 19-No. 2-A Warner & Swasey.
- ### BORING MACHINES
- 1-Beaman & Smith Horiz. Cylinder Boring and Milling.
  - 1-6" bar Sellers Cylinder Boring and Facing machine.
  - 1-24" bar Cleveland.
  - 1-34" Binase.
  - 1-34" bar Barrett.

### PLANERS

- 1-24"x24"x 6 Hamilton.
- 1-24"x24"x 6 American.
- 1-30"x30"x 8 Ohio.
- 1-30"x30"x10 Gray.
- 1-36"x36"x10 Whitcomb, 2 heads.
- 1-36"x36"x10 Cincinnati, 2 heads.
- 1-36"x36"x13 Sellers Spiral, 2 hds.
- 1-36"x36"x17 Powell, 2 heads.
- 1-48"x48"x18 Sellers Spiral, 1 hd.
- 1-76"x48"x18 Woodward & Powell, 2 heads.

### MILLING MACHINES.

- 1-No. 9 Kempsmith Plain.
- 1-No. 24 Brown & Sharpe.
- 1-No. 2 Becker-Brainard Plain.
- 1-No. 5 Becker-Brainard Plain.

### GRINDERS

- 2-10"x36" Norton Plain.
- 1-10"x50" Norton Plain.
- 3-12"x24" Modern Plain.
- 1-12"x42" Cincinnati.
- 1-No. 70 Heald Internal.
- 1-No. 1 1/2 Bath.
- 1-No. 22 Brown & Sharpe Internal.
- 1-Thompson 8"x48" Surface.
- 1-36" Pratt & Whitney Vertical.

Write for our Green List describing these and many others

**HILL, CLARKE & CO. OF CHICAGO**  
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## Machine Tools Immediately Available

One Kempsmith No. 3 Universal Miller, new.  
One Kempsmith No. 3 Plain Miller, new.  
One Chandler Planer 36"x12', two heads, used.  
One Reed-Prentice 4' speed box Radial Drill, used.  
One No. 4-B Becker Vertical Miller, used.  
One No. 5 Universal Becker Vertical Miller, used.  
One Pratt & Whitney 2"x26" Turret Lathe.  
One Bath Universal Grinder No. 2, 10x24".  
One Fraser Universal Grinder, with complete equip., practically new.  
One Flather 42x48x14' Planer, with two rail heads, one side head.  
One Bullard Vertical Boring and Turning Mill, 78" swing, two heads.  
One Reed Lathe, 24" swing, 20' bed, with compound rest.

**Factory & Mill Supply Co.**  
137 Oliver St., Boston, Mass.

### Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

# Good Used Tools

We offer the following used machine tools. Further particulars gladly given on receipt of request. We have facilities for overhauling used machinery and aim to offer only trustworthy machines.

## BORING MACHINES.

No. 2 Rochester, table type, belt driven, face plate drive, round table, facing head.

## DRILLING MACHINES.

No. 1-1 spindle Avey, bench (24).  
No. 1-1 spindle Avey, column.  
2-sp. Taylor & Fenn manufacturing.  
3-sp. Taylor & Fenn manufacturing.  
No. D1 Colburn heavy duty (9).  
37" Gould & Eberhardt, sliding head, b. g., p. f., tapping att. and compound table.

24" Mechanics, sliding head, back geared, power feed.  
23" Snyder, sliding head, belted power feed.  
4' Bickford plain radial, gear box, tapping attachment.  
5' Drees plain radial, cone drive, b. g., tapping attachment.

## GRINDERS.

No. 4-12x60 Landis universal.  
No. 11 Landis plain.  
10x48 Pratt & Whitney plain.  
10x36 Norton plain, (3).  
12"x36" Cincinnati plain.  
No. 2 B & S. universal.  
No. 2 Oakley univ. cutter and tool.  
No. 34 VanNorman, water att. (2).  
No. 70 Heald internal.

No. 75 Heald internal.  
No. 11 Rivett, oscillating.  
No. 6 Bryant internal.  
Garrigus rotary surface (16).  
Pratt & Whitney vertical surface magnetic and new rotary chucks.  
No. 1 Norton cutter and tool, (2).  
Blanchard belt driven high power vertical surface.

## LATHES.

9x12 Porter Cable, with taper and facing attachment.  
14"x6' Prentice Brothers, with chuck.  
14"x6' Lodge & Shipley, c. r., p. c. f. oil pan, pump and tubing.  
16x6 Hendey, geared head, c. r., p. c. f., s. r., hollow spindle.  
16"x8' Cincinnati, d. b. g., quick change gears.

18"x8' Perkins.  
18"x8' Reed, c. r., p. c. f.  
18x10 Robbins.  
20x12 Lodge & Shipley, patent head.  
20x7 Shellenbach, d. b. gear.  
26"x12' Putnam, d. b. g., c. r.  
24x12 Niles, c. r., p. c. f.  
30x10 plain rest, p. c. f.  
44"x16' Putnam, c. r., p. c. f.

## MILLING MACHINES.

No. 14A Garvin plain, (7).  
No. 14 Garvin plain, (4).  
No. 15 Garvin plain.  
No. 3 Fox plain No. 1 arbor.  
No. 2 Cincinnati vertical cone drive.  
No. 2 Owen plain, with new Cincinnati vise.

No. 1 1/2 Cincinnati plain, complete with new vises.  
No. 2 Kempsmith univ. complete.  
No. 1 1/2 Brown & Sharpe, complete with new Cincinnati vise.  
No. 0 Steptoe plain, complete with vise.

## SCREW MACHINES.

No. 1 P & W., wire feed.  
24" Gisholt turret, 6 1/2" hole.  
4 1/2" Cleveland automatic.

2" Cleveland automatic.  
2 1/2x26 Acme flat turret, chucking equipment.

## MISCELLANEOUS.

Broaching mchs., No. 4 Lapointe, (2).  
Planer, 42x30x10 Powell, 2 heads, t. & l. pulley, c. s.

Planer, 24x24x6 Putnam.  
Shaper, 20" Hendey.  
Shaper, 20" Gould & Eberhardt.

# Henry Prentiss & Company

Incorporated

149 Broadway

New York

# Bennett Bargains

## Planers

18-22-26-30-32-36-42-54-60" between housings; 1-2-3 and 4 heads.

## Vertical Boring Mills

30", 36", 51", 76" and 10'.

## Horizontal Boring Machines

24", 3", 4"; also 5" Barret type.

## Radial Drills

24", 3', 5' and 6'—Plain and Universal.

## Upright and Multiple Drills

12"-24"-36" and 42"; also 3 and 6 spindle.

## Lathes

Various sizes from 16" to 92" swing, 6' to 32' beds.

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2x24", 20x6", also 20", 28" and 34".

## Milling Machines

48x36x14' Ingersoll 4 heads; 20"x7' Brainerd.

36" Shaper; 54" Slotter.

Also Punches and Shears, Gear Cutters, Grinders, Hammers, Presses, Cranes, Bolt and Pipe Machines

Advise us of all equipment you wish to purchase or sell

**G. L. Bennett Machinery Co., Inc.**

30 Church Street - - New York City

# Fully Guaranteed Machine Bargains

3—No. 4 Warner & Swasey Screw Mches., Geared Friction Head.

6—No. 6 Warner & Swasey Geared Friction Head Screw Mches.

2—No. 3-A Warner & Swasey Hollow Hexagon Turret Lathes (one new).

2—No. 2-A Warner & Swasey Hollow Hexagon Turret Lathes.

1—42" Gisholt Boring Mill.

1—No. 3 Cincinnati Plain Milling Machine.

2—No. 25 Becker Milling Machines.

1—30x36x10' Cincinnati Planer.

1—24"x24"x6' Gray Planer.

1—30"x30"x8' Pond Planer.

1—D-8 Colburn High Duty Drilling Machine.

1—4 spindle Cincinnati Sensitive Drill.

1—No. 12 Modern Grinder.

1—6x32 Norton Grinder.

1—No. 2 Wells Bros. Rod and Bolt Cutter.

1—No. 14 Besly Disc Grinder.

1—24"x6 Gould & Eberhardt Gear Cutter.

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## Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, \$4.

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<p><b>Dies Tools Special Machinery</b></p>	<p><b>Robbins, Gamwell &amp; Co.</b> Pittsfield, Mass.</p> <p>Accuracy and efficiency in gages, dies and special machinery, is our specialty.</p>
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<p><b>Drop Forgings (All Kinds)</b></p>	<p><b>Bonney Vise &amp; Tool Works, Inc.</b> Allentown, Pa.</p> <p><b>Quick and Accurate Drop Forging and Finishing</b></p> <p>Good tools, good men, and good management insure precision and promptness. Investigate; when you know our facilities and our record you'll want our service.</p>
<p><b>Is Your Equipment All Busy?</b></p>	<p>Why not get in some special work to fill in the idle time? Let the manufacturing public know what you can do, and what machinery you have to do it with. Space in this department costs but little, and covers the metal manufacturing field as with a blanket. Why not try it?</p>

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Contracting Machinists—Accurate work on a quantity production basis is our specialty.

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That costs money—a lot more than it will cost to find some way to keep it busy. If you have the idle capacity and want work for it, the "Contract Work Wanted" department will help you get in touch with machine-making plants everywhere in the United States. A space the size of this—a quarter page—costs eight dollars a month; one of the smaller spaces like those shown above—an eighth page—only four dollars a month. Try it out for a while. Address: A. H. Hitchcock, 1220-1235 Caxton Bldg., Chicago, Ill.

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Has heavy plates and axles. Easiest running, strongest and most durable double-wheel caster made. Lasts three times as long as others.

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The strongest and most durable single caster. Won't crush or break. Swivels on steel machined rollers.

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HAMILTON, OHIO**



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Buchanan Co., Thos., Cincinnati  
United States Silica Co., 1941 Peoples Gas Bldg., Chicago

### Angle Plates

Horton Scale & Mch. Co., Roxbury, Mass.  
Heid Brothers, Co., Inc., Beverly, Mass.  
Whiting & Comstock, Hartford, Conn.

### Arbors, Roller Grip

Alert Tool Co., Philadelphia

### Arbors, Solid

Nicholson & Co. W. H., Wilkes-Barre, Pa.  
E. O. Partridge 2047 W. Lake St., Chicago

### Automatics

McDonough Mfg. Co., Eau Claire, Wis.  
National Acme Co., Cleveland  
New Britain Machine Co., New Britain, Conn.

### Balancing Ways

Anderson Bros. Mfg. Co., Rockford, Ill.

### Ball Bearings

Abbott Ball Co., Hartford, Conn.  
Gwilliam Co., 235 W. 58th St., New York

### Balls, Brass, Bronze and Steel

Abbott Ball Co., Hartford, Conn.  
Gwilliam Co., 235 W. 58th St., New York

### Band Saw Machines, for Metal

Armstrong-Bloom Mfg. Co., 241 N. Francisco Av., Chicago

### Barrels, Tumbling

Abbott Ball Co., Hartford, Conn.  
Buchanan Co., Thos., Cincinnati  
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

### Benchs, For Toolmakers

Ritchie-Werts Co., Dayton, Ohio

### Bench Legs, Steel

New Britain Mch. Co., New Britain, Conn.

### Bending Machines, Hand and Power

Hendley & Whittemore Co., Beloit, Wis.  
Lewthwaite Co., Geo. A., 115 Walker St., N. Y.  
Leurie Mfg. Co., Springfield, Ill.  
Pedrick Tool & Machine Co., Philadelphia  
Underwood Corp., H. B., Philadelphia

### Bending Rolls, Plate and Angle

Wickes Bros., Saginaw, Mich.

### Blue Printing Machines

Wickes Brothers, Saginaw, Mich.

### Bolt and Nut Machinery

Webster & Perks Tool Co., Springfield, Ohio

### Boring Bars

Alert Tool Co., Philadelphia  
Kelly Reamer Co., Cleveland  
Madison Mfg. Co., Muskegon, Mich.  
Pedrick Tool & Machine Co., Philadelphia  
Ready Tool Co., Bridgeport, Conn.  
Underwood Corp., H. B., Philadelphia

### Boring Bars, Cylinder

Pedrick Tool & Machine Co., Philadelphia  
Underwood Corp., H. B., Philadelphia

### Boring, Drilling and Milling Machines, Horizontal

Beaman & Smith Co., Providence, R. I.  
Becker Milling Machine Co., Boston  
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.  
Fawling & Harnischfeger Co., Milwaukee  
Schipper Machine & Tool Co., Aurora, Ind.  
Simmons Machine Co., Albany, N. Y.

### Boring Heads

Kelly Reamer Co., Cleveland  
Waterston, J. M., Detroit, Mich.

### Boring Machines, Cylinder

Barrett Mch. Tool Co., Meadville, Pa.

### Boring Machines, Horizontal

Cincinnati Pulley Machinery Co., Cincinnati  
Pedrick Tool & Machine Co., Philadelphia  
Rockford Drilling Machine Co., Rockford, Ill.

### Boring and Turning Machines, Vertical

Cincinnati Planer Co., Cincinnati  
Simmons Machine Co., Albany, N. Y.  
Turner Machine Co., Danbury, Conn.

### Bowden Wire Mechanism

Gwilliam Co., 253 W. 58th St., New York

### Brackets, Electric Light

Newman Mfg. Co., Cincinnati

### Broaches

Lapointe Co., J. N., New London, Conn.

### Broaching Machines

Lapointe Co., J. N., New London, Conn.  
Simmons Machine Co., Albany, N. Y.

### Bushings, Brass and Bronze

Bunting Brass & Bronze Co., Toledo, Ohio

### Case Hardening Compound

Reil & Gossett Co., 613 W. 80th St., Chicago  
Buchanan Chemical Co., C. G., Cincinnati  
Buchanan Co., Thos., Cincinnati

### Castellating Machines

Craftsman Tool Co., Conneaut, Ohio

### Casters for Trucks

Hamilton Caster & Mfg. Co., Hamilton, Ohio

### Centers, Index

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Brown & Sharpe Mfg. Co., Providence, R. I.  
Carter & Hakes Mch. Co., W. Winsted, Conn.  
Dickow, Fred C., 1855 W. Lake St., Chicago  
Schipper Machine & Tool Co., Aurora, Ind.  
Steeple Co., John, Cincinnati  
Whiting & Comstock, Hartford, Conn.

### Chains, Power Transmission

Whitney Mfg. Co., Hartford, Conn.  
Morse Chain Co., Ithaca, N. Y.

### Chasers

Modern Tool Co., Erie, Pa.  
National Acme Co., Cleveland

### Chucking Machines

New Britain Mch. Co., New Britain, Conn.  
Wood Turret Machine Co., Brazil, Ind.

### Chucks, Air

Frontier Chuck & Tool Co., Buffalo, N. Y.

### Chucks, Centering

Cushman Chuck Co., Hartford, Conn.  
McCroskey Tool Corporation, Meadville, Pa.  
Thomas Elevator Co., 31 S. Hoynes Ave., Chicago

### Chucks, Draw-in and Thrust

Hardinge Bros., 1770 Berteau Av., Chicago

### Chucks, Drill

Cushman Chuck Co., Hartford, Conn.  
Dalton Mfg. Corp., 1911 Park Av., N. Y.  
Hartford Special Mch. Co., Hartford, Conn.  
Jacobs Mfg. Co., Hartford, Conn.  
McCroskey Tool Corporation, Meadville, Pa.  
Modern Tool Co., Erie, Pa.  
Nielsen-Barton Chuck Co., 106 S. Jefferson St., Chicago  
Scully-Jones & Co., Ry. Exch. Bldg., Chicago  
Thomas Elevator Co., 31 S. Hoynes Ave., Chicago  
Weaver Mfg. Co., Springfield, Ill.

### Chucks, Drill and Tap

Cushman Chuck Co., Hartford, Conn.  
McCroskey Tool Corporation, Meadville, Pa.  
Modern Tool Co., Erie, Pa.  
Peter Bros. Mfg. Co., Algonquin, Ill.  
Scully-Jones & Co., Ry. Exch. Bldg., Chicago

### Chucks, Lathe

Cushman Chuck Co., Hartford, Conn.  
Dalton Mfg. Corp., 1911 Park Av., N. Y.  
Hogson & Pettis Mfg. Co., New Haven, Conn.  
Newman Mfg. Co., Cincinnati  
Sidney Tool Co., Sidney, Ohio  
Simmons Machine Co., Albany, N. Y.  
Thomas Elevator Co., 31 S. Hoynes Ave., Chicago

## Classified Finding Index

### Chucks, Magnetic

Dalton Mfg. Corp., 1911 Park Ave., N. Y.  
Heald Machine Co., Worcester, Mass.

### Chucks, Wrenchless

Thomas Elevator Co., 818 Hoyne Ave.  
Chicago

### Clamps, Parallel, for Tool Makers

Ellis Mfg. Co., M. B., Worcester, Mass.

### Clutches—Friction

Carroll Mfg. Co., L. W., Batavia, Ohio  
Conway & Co., Cincinnati  
Edgemont Machine Co., Dayton, Ohio  
Milwaukee Shaper Co., Milwaukee, Wis.  
National Clutch Co., 1880 Fulton St., Chicago

### Cold Saws

Burke Machine Tool Co., Conneaut, Ohio  
Cochrane Ely Co., Rochester, N. Y.  
Greenfield Tap & Die Corp., Greenfield, Mass.  
Peter Bros. Mfg. Co., Algonquin, Ill.

### Contract Work Wanted

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Geuder, Faeschke & Frey Co., Milwaukee, Wis.  
Lough Brothers, 90 West St., New York  
Mauch Chunk Iron Works, Mauch Chunk, Pa.  
New Britain Machine Co., New Britain, Conn.  
Robbins, Gamwell & Co., Pittsfield, Mass.  
Steber Machine Co., Utica, N. Y.

### Couplings, Friction Clutch

Conway & Co., Cincinnati

### Cranes, Hand Power

Euclid Crane & Hoist Co., Euclid, Ohio  
Fawling & Harnischfeger Co., Milwaukee, Wis.  
Weaver Mfg. Co., Springfield, Ill.

### Cranes, Portable

Canedy-Otto Mfg. Co., Chicago Heights, Ill.  
Canton Foundry & Mch. Co., Canton, Ohio  
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### Cranes, Traveling

Euclid Crane & Hoist Co., Euclid, Ohio  
Fawling & Harnischfeger Co., Milwaukee, Wis.

### Crank Pin Turning Machine

Pedrick Tool & Machine Co., Philadelphia  
Underwood Corp., H. B., Philadelphia

### Cranka, Ball

Cincinnati Ball Crank Co., Cincinnati

### Cutters, Adjustable

Becker Milling Machine Co., Boston, Mass.  
McCrosky Tool Corporation, Mendville, Pa.  
Madison Mfg. Co., Muskegon, Mich.

### Cutters, Bolt

Lewthwaite Co., Geo. A., 116 Walker St., N. Y.

### Cutters, Keyseating

Racine Tool & Machine Co., Racine, Wis.  
Whitney Mfg. Co., Hartford, Conn.

### Cutters, Milling

Becker Milling Machine Co., Boston, Mass.  
Brown & Sharpe Mfg. Co., Providence, R. I.  
Clough, R. M., Meriden, Conn.  
Genesse Mfg. Co., Rochester, N. Y.  
Michigan Tool Co., Detroit, Mich.  
Racine Tool & Machine Co., Racine, Wis.  
Sterling Products Co., Inc., 549 Washington  
Blvd., Chicago  
Whitney Mfg. Co., Hartford, Conn.

### Cutting-Off Machines

Davis Machine Tool Co., Rochester, N. Y.  
Etna Mfg. Co., Toledo, Ohio  
Peter Bros. Mfg. Co., Algonquin, Ill.  
Wood Turret Machine Co., Brazil, Ind.

### Cylinder Boring Machines, Portable

Pedrick Tool & Machine Co., Philadelphia  
Stow Flexible Shaft Co., Philadelphia  
Underwood Corp., H. B., Philadelphia

### Cylinder or Dome Facing Machines

Underwood Corp., H. B., Philadelphia

### Dials, Graduated

Wiggins & Co., A. V., Syracuse, N. Y.

### Die Heads, Self-Opening

Modern Tool Co., Erie, Pa.  
Murchey Machine & Tool Co., Detroit, Mich.  
National Acme Company, Cleveland

### Diesing Machines

Henry & Wright Mfg. Co., Hartford, Conn.

### Dies, Pipe Threading

Barnall Keeler Mch. Wks., Edwardsville, Ill.  
Greenfield Tap & Die Corp., Greenfield, Mass.

### Dies, Screw and Thread Cutting

Greenfield Tap & Die Corp., Greenfield, Mass.  
Hardinge Brothers, 1770 Berteau Av., Chicago  
National Acme Co., Cleveland

### Dies, Self-Opening Adjustable

Greenfield Tap & Die Corp., Greenfield, Mass.  
Modern Tool Co., Erie, Pa.  
Murchey Mch. & Tool Co., Detroit, Mich.  
Rickert-Shafer Co., Erie, Pa.

### Dogs, Machine

Ready Tool Co., Bridgeport, Conn.

### Drilling Machine Heads

Nelson Black Mfg. Co., Detroit, Mich.  
Newman Mfg. Co., Cincinnati  
Rockford Drilling Machine Co., Rockford, Ill.  
Sellew Machine Tool Co., Pawtucket, R. I.  
Spafford Tool Works, Hartford, Conn.  
United States Machine Tool Co., Cincinnati

### Drilling Machines, Bench

Burke Machine Tool Co., Conneaut, Ohio  
Canedy-Otto Mfg. Co., Chicago Heights, Ill.  
Cincinnati Pulley Machinery Co., Cincinnati  
Denno Machine Tool Co., Cleveland  
High Speed Hammer Co., Rochester, N. Y.  
Reed Co., Francis, Worcester, Mass.  
Rockford Drilling Mch. Co., Rockford, Ill.  
Taylor & Fenn Co., Hartford, Conn.

### Drilling Machines, Hand

United States Machine Tool Co., Cincinnati

### Drilling Machines, Horizontal

Fawling & Harnischfeger Co., Milwaukee, Wis.  
Rockford Drilling Mch. Co., Rockford, Ill.

### Drilling Machines, Multiple Spindle

Cincinnati Pulley Machinery Co., Cincinnati  
Denno Machine Tool Co., Cleveland, Ohio  
Edlund Machinery Co., Inc., Cortland, N. Y.  
Henry & Wright Mfg. Co., Hartford, Conn.  
National Acme Co., Cleveland  
Reed Co., Francis, Worcester, Mass.  
Rockford Drilling Mch. Co., Rockford, Ill.  
Sipp Machine Co., Paterson, N. J.  
Taylor & Fenn Co., Hartford, Conn.

### Drilling Machines, Portable Electric

Independent Pneumatic Tool Co., 600 W.  
Jackson Blvd., Chicago  
Stow Flexible Shaft Co., Philadelphia  
Van Dorn Electric Tool Co., Cleveland  
Wisconsin Electric Co., Racine, Wis.

### Drilling Machines, Post

Canedy-Otto Mfg. Co., Chicago Heights, Ill.  
Hammond Mfg. Co., Cleveland, Ohio  
Henry & Wright Mfg. Co., Hartford, Conn.  
Mueller Machine Tool Co., Cincinnati  
Silver Mfg. Co., Salem, Ohio

### Drilling Machines, Radial

Canedy-Otto Mfg. Co., Chicago Heights, Ill.  
Hammond Mfg. Co., Cleveland  
Henry & Wright Mfg. Co., Hartford, Conn.  
Mueller Machine Tool Co., Cincinnati  
Fawling & Harnischfeger Co., Milwaukee, Wis.  
Silver Mfg. Co., Salem, Ohio  
Taylor & Fenn Co., Hartford, Conn.  
Sipp Machine Co., Paterson, N. J.  
Wickes Bros., Saginaw, Mich.

### Drilling Machines, Sensitive

Burke Machine Tool Co., Conneaut, Ohio  
Canedy-Otto Mfg. Co., Chicago Heights, Ill.  
Cincinnati Pulley Machinery Co., Cincinnati  
Denno Machine Tool Co., Cleveland  
Edlund Machinery Co., Inc., Cortland, N. Y.  
Fenn Mfg. Co., Hartford, Conn.  
Hardinge Brothers, 1770 Berteau Av., Chicago  
Henry & Wright Mfg. Co., Hartford, Conn.

## Classified Finding Index

Reed Co., Francis, Worcester, Mass.  
Sipp Machine Co., Paterson, N. J.  
Taylor & Fenn Co., Hartford, Conn.  
United States Machine Tool Co., Cincinnati  
Wisconsin Electric Co., Racine, Wis.

**Drilling, Milling and Boring Machines, Vertical**  
Aurora Tool Works, Aurora, Ind.  
Knight Machinery Co., W. B., St. Louis, Mo.

**Drilling Machines, Vertical**  
Aurora Tool Works, Aurora, Ind.  
Canedy-Otto Mfg. Co., Chicago Heights, Ill.  
Cincinnati Pulley Machinery Co., Cincinnati  
Davis Machine Tool Co., Rochester, N. Y.  
Henry & Wright Mfg. Co., Hartford, Conn.  
Hinchley Machine Works, Hinchley, Ill.  
Rockford Drilling Machine Co., Rockford, Ill.  
Silver Mfg. Co., Salem, Ohio  
Sipp Machine Co., Paterson, N. J.  
Taylor & Fenn Co., Hartford, Conn.

**Drilling and Tapping Attachments**  
Aurora Tool Works, Aurora, Ind.  
Demco Machine Tool Co., Cleveland  
Henry & Wright Mfg. Co., Hartford, Conn.  
McCroskey Tool Corporation, Meadville, Pa.  
Modern Tool Co., Erie, Pa.  
Newman Mfg. Co., Cincinnati  
Reed Co., Francis, Worcester, Mass.  
Schipper Machine & Tool Co., Aurora, Ind.  
Sipp Machine Co., Paterson, N. J.  
Turner Machine Co., Danbury, Conn.

**Drills, Pneumatic**  
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago

**Drills, Twist**  
Sterling Products Co., 549 Washington Blvd., Chicago

**Dust Handling Equipment**  
Knickerbocker Co., Jackson, Mich.

**Emery Stands**  
Blount Co., J. G., Everett, Mass.  
Buchanan Co., Thos., Cincinnati  
Carroll Mfg. Co., L. W., Batavia, Ohio  
Marche Mfg. Co., Indianapolis, Ind.  
Partridge, E. O., 2047 W. Lake St., Chicago

**Emery Wheel Dressers and Cutters**  
Buchanan Co., Thos., Cincinnati  
Taylor & Fenn Co., Hartford, Conn.

**Feed Gear, for Turret Lathes**  
Wiggins & Co., A. V., Syracuse, N. Y.

**Feeders, Oil and Soda Water**  
New Britain Machine Co., New Britain, Conn.

**Filing Machines, Die**  
Cochrane-Bly Co., Rochester, N. Y.

**Flexible Shafts**  
Stow Flexible Shaft Co., Philadelphia, Pa.

**Forges**  
Canedy-Otto Mfg. Co., Chicago Heights, Ill.

**Furnaces**  
Bennett Co., W. R., Elmwood, Conn.

**Furniture, Machine Shop**  
New Britain Machine Co., New Britain, Conn.

**Gauges, Amplifying, Snap and Plug**  
North Side Tool Co., Dayton, Ohio

**Gauges, Taper**  
Hartford Special Mch. Co., Hartford, Conn.  
Way Co., A. F., Hartford, Conn.

**Gauging Machines**  
Davis Tool Co., Cleveland, Ohio  
North Side Tool Co., Dayton, Ohio

**Gear Cutting Machines**  
Brown & Sharpe Mfg. Co., Providence, R. I.

**Grinding Machines, Bench**  
Blount Co., J. G., Everett, Mass.  
Carroll Mfg. Co., L. W., Batavia, Ohio  
Partridge, E. O., 2047 W. Lake St., Chicago  
Webster & Perks Tool Co., Springfield, Ohio

**Grinding Machines, Cutter, Reamer and Tool**  
Blount Co., J. G., Everett, Mass.  
Cough, R. M., Meriden, Conn.  
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.

Greenfield Machine Co., Greenfield, Mass.  
Greenfield Tap & Die Corp., Greenfield, Mass.  
McDonough Mfg. Co., Eau Claire, Wis.  
Manhattan Machine & Tool Works, Grand Rapids, Mich.  
Marche Mfg. Co., Indianapolis, Ind.  
National Acme Co., Cleveland  
Simmons Machine Co., Albany, N. Y.  
Thompson Grinder Co., Springfield, Ohio  
Wilmarth & Norman Co., Grand Rapids, Mich.

**Grinding Machines, Cylinder**  
Heald Machine Co., Worcester, Mass.  
Whitney & Son, Baxter D., Winchendon, Mass.

**Grinding Machines, Cylindrical**  
Brown & Sharpe Mfg. Co., Providence, R. I.  
Greenfield Machine Co., Greenfield, Mass.  
McDonough Mfg. Co., Eau Claire, Wis.  
Manhattan Machine & Tool Works, Grand Rapids, Mich.  
Ott Grinder Co., Indianapolis, Ind.  
Schmidt Co., B. L., Davenport, Iowa  
Simmons Machine Co., Albany, N. Y.  
Thompson Grinder Co., Springfield, Ohio  
Webster & Perks Tool Co., Springfield, Ohio

**Grinding Machines, Die**  
Abrasive Mch. Tool Co., E. Providence, R. I.  
Manhattan Machine & Tool Works, Grand Rapids, Mich.  
Reed Bros. Co., Inc., Beverly, Mass.  
Thompson Grinder Co., Springfield, Ohio  
Wilmarth & Norman Co., Grand Rapids, Mich.

**Grinding Machines, Disc**  
Badger Tool Co., Beloit, Wis.  
Sellew Machine Tool Co., Pawtucket, R. I.

**Grinding Machines, Drill**  
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.  
La Salle Tool Co., La Salle, Ill.  
Wilmarth & Norman Co., Grand Rapids, Mich.

**Grinding Machines, Face**  
Marche Mfg. Co., Indianapolis, Ind.  
Taylor & Fenn Co., Hartford, Conn.  
Thompson Grinder Co., Springfield, Ohio

**Grinding Machines, Gage**  
Abrasive Mch. Tool Co., E. Providence, R. I.

**Grinding Machines, Internal**  
Dalton Mfg. Corp., 1911 Park Av., New York  
Heald Machine Co., Worcester, Mass.  
Modern Tool Co., Erie, Pa.  
Ott Grinder Co., Indianapolis, Ind.  
Taylor & Fenn Co., Hartford, Conn.  
Thompson Grinder Co., Springfield, Ohio  
Whitney & Son, Baxter D., Winchendon, Mass.  
Wilmarth & Norman Co., Grand Rapids, Mich.

**Grinding Machines, Portable**  
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago  
Marche Mfg. Co., Indianapolis, Ind.  
Stow Flexible Shaft Co., Philadelphia  
Strand & Co., N. A., 635 W. Jackson Blvd., Chicago

Van Dorn Electric Tool Co., Cleveland  
Wisconsin Electric Co., Racine, Wis.

**Grinding Machines, Snagging**  
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.  
Manhattan Machine & Tool Works, Grand Rapids, Mich.  
Marche Mfg. Co., Indianapolis, Ind.

**Grinding Machines, Surface**  
Abrasive Mch. Tool Co., E. Providence, R. I.  
Bristol Machine Tool Co., Bristol, Conn.  
Cady Co., C. N., Canastota, N. Y.  
Heald Machine Co., Worcester, Mass.  
La Salle Tool Co., La Salle, Ill.  
Reid Brothers Co., Inc., Beverly, Mass.  
Thompson Grinder Co., Springfield, Ohio  
Wilmarth & Norman Co., Grand Rapids, Mich.

## Classified Finding Index

### Grinding Machines, Universal

Brown & Sharpe Mfg. Co., Providence, R. I.  
Grand Rapids Grinding Machine Co., Grand Rapids, Mich.  
Greenfield Machine Co., Greenfield, Mass.  
Greenfield Tap & Die Corp., Greenfield, Mass.  
McDonough Mfg. Co., Eau Claire, Wis.  
Modern Tool Co., Erie, Pa.  
Oli Grinder Co., Indianapolis, Ind.  
Simmons Machine Co., Albany, N. Y.  
Thompson Grinder Co., Springfield, Ohio  
Webster & Perks Tool Co., Springfield, Ohio  
Wilmarth & Norman Co., Grand Rapids, Mich.

### Hack Saw Blades

Racine Tool & Machine Co., Racine, Wis.  
Sterling Products Co., 549 Washington Blvd., Chicago

### Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago  
Peerless Machine Co., Racine, Wis.  
Racine Tool & Machine Co., Racine, Wis.  
Sterling Products Co., 549 Washington Blvd., Chicago

### Hammers, Belt and Motor Driven

Barr H. Edall, Erie, Pa.  
Beaudry & Co., Boston, Mass.  
High Speed Hammer Co., Rochester, N. Y.  
Quickwork Co., St. Marys, Ohio  
United Hammer Co., Boston, Mass.

### Hammers, Riveting

High Speed Hammer Co., Rochester, N. Y.

### Handles, Machine

Cincinnati Ball Crank Co., Cincinnati

### Heads, Drivng

Dickow, Fred C., 1556 W. Lake St., Chicago  
Simmons Machine Co., Albany, N. Y.  
Stephens Co., John, Cincinnati  
Willard Press & Tool Co., Cincinnati

### Hobbs

Michigan Tool Co., Detroit, Mich.

### Hoists, Air

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago

### Hoists, Electric

Euclid Crane & Hoist Co., Euclid, Ohio  
Thomas Elevator Co., 51 S. Hoyne Ave., Chicago  
Weaver Mfg. Co., Springfield, Ill.

### Hoists, Electric Traveling

Euclid Crane & Hoist Co., Euclid, Ohio  
Fawling & Harnischfeger Co., Milwaukee, Wis.

### Hoists, Portable

Canton Foundry & Machine Co., Canton, Ohio

### Jigs, Fixtures, Tools, Etc.

Craftsman Tool Co., Cincinnati, Ohio  
Hartford Special Mch. Co., Hartford, Conn.  
Hinckley Machine Works, Hinckley, Ill.  
Lee Co., Frank H., Danbury, Conn.  
Nestor Mfg. Co., 40 W. 13th St., New York  
North Side Tool Co., Dayton, Ohio  
Spafford Tool Works, Hartford, Conn.  
Way Co., A. F., Hartford, Conn.  
Whiting & Comstock, Hartford, Conn.  
Wiggins & Co., A. V., Syracuse, N. Y.

### Joints, Universal

Almae Mch. & Tool Works, Hartford, Conn.

### Keyseating Machines

Chattanooga Mch. Co., Chattanooga, Tenn.  
Davis Machine Tool Co., Rochester, N. Y.  
Lapointe Co., J. N., New London, Conn.  
National Machine Tool Co., Cincinnati  
Racine Tool & Machine Co., Racine, Wis.  
Whitney Mfg. Co., Hartford, Conn.

### Lathe Accessories and Attachments

Dalton Mfg. Corp., 1911 Park Av., New York  
Greaves-Klusman Tool Co., Cincinnati  
McCroskey Tool Corporation, Meadville, Pa.  
Modern Tool Co., Erie, Pa.  
Sidney Tool Co., Sidney, Ohio  
Simmons Machine Co., Albany, N. Y.  
South Bend Lathe Works, South Bend, Ind.

### Lathes, Bench

Blount Co., J. G., Everett, Mass.  
Dalton Mfg. Corp., 1911 Park Av., New York  
Greenfield Tap & Die Corp., Greenfield, Mass.  
Hardinge Brothers, 1770 Bertrian Av., Chicago  
South Bend Lathe Works, South Bend, Ind.

### Lathes, Engine

Casady-Otto Mfg. Co., Chicago Heights, Ill.  
Chard Lathe Co., Newcaste, Ind.  
Crawford Machine Tool Co., Inc., 21 Park Row, New York  
Dalton Mfg. Corp., 1911 Park Av., New York  
Davis Machine Tool Co., Rochester, N. Y.  
Greaves-Klusman Tool Co., Cincinnati  
Monarch Machine Tool Co., Sidney, Ohio  
Mueller Machine Tool Co., Cincinnati  
Sidney Tool Co., Sidney, Ohio  
Smith Mfg. Co., Philip, Sidney, Ohio  
South Bend Lathe Works, South Bend, Ind.  
Willard Machine Tool Co., Cincinnati  
Worcester Lathe Co., Worcester, Mass.  
Wicks Bros., Saginaw, Mich.

### Lathes, Flat Turret

Acme Machine Tool Co., Cincinnati

### Lathes, Foot Power

Dalton Mfg. Corp., 1911 Park Av., New York

### Lathes, Horizontal Turret

Acme Machine Tool Co., Cincinnati  
Chard Lathe Co., Newcaste, Ind.  
Davis Machine Tool Co., Rochester, N. Y.  
Smurr & Kamen Co., 528 N. Albany Av., Chicago  
Risinsle Turret Machine Co., Madison, Wis.  
Wood Turret Machine Co., Brazil, Ind.

### Lathes, Short Cut

Adams Mfg. Co., O. R., Rochester, N. Y.  
Sidney Tool Co., Sidney, Ohio

### Lathes, Speed and Hand

Blount Co., J. G., Everett, Mass.  
Greenfield Tap & Die Corp., Greenfield, Mass.

### Lathes, Tilted Turret

Wood Turret Machine Co., Brazil, Ind.

### Lockers, Shelving and Cupboards, Steel

Terrell's Equipment Co., Grand Rapids, Mich.

### Mandrels, Expanding

Alert Tool Co., Philadelphia  
Nicholson & Co., W. H., Wilkes-Barre, Pa.

### Mandrels, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

### Metal Cutting Machines, Sheet

Racine Tool & Machine Co., Racine, Wis.  
Savage Co., W. J., Knoxville, Tenn.  
Way Co., A. F., Hartford, Conn.

### Milling Attachments

Brown & Sharpe Mfg. Co., Providence, R. I.  
Burke Machine Tool Co., Conneaut, Ohio  
Hinckley Machine Works, Hinckley, Ill.  
Knight Machinery Co., W. B., St. Louis, Mo.  
Stephens Co., John, Cincinnati  
Whiting & Comstock, Hartford, Conn.  
Willard Press & Tool Co., Cincinnati

### Milling Machines, Automatic

Becker Milling Machine Co., Boston, Mass.

### Milling Machines, Bench

Eickett Machine & Mfg. Co., Cincinnati  
Burke Machine Tool Co., Conneaut, Ohio  
Carter & Hakes Mch. Co., W. Winsted, Conn.  
Hardinge Brothers, 1770 Bertrian Av., Chicago  
Simmons Machine Co., Albany, N. Y.

### Milling Machines, Hand

Bristol Machine Tool Co., Bristol, Conn.  
Burke Machine Tool Co., Conneaut, Ohio  
Carter & Hakes Mch. Co., W. Winsted, Conn.  
Davenport Mfg. Co., Meadville, Pa.  
Stephens Co., John, Cincinnati  
Whitney Mfg. Co., Hartford, Conn.

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## Milling Machines, Horizontal

Beaman & Smith Co., Providence, R. I.  
Becker Milling Machine Co., Boston, Mass.  
Gooley & Edlund, Cortland, N. Y.  
Stepstoe Co., John, Cincinnati

## Milling Machines, Plain

American Milling Machine Co., Cincinnati  
Beaman & Smith Co., Providence, R. I.  
Becker Milling Machine Co., Boston, Mass.  
Bickett Machine & Mfg. Co., Cincinnati  
Brown & Sharpe Mfg. Co., Providence, R. I.  
Burke Machine Tool Co., Conneaut, Ohio  
Cochrane-Bly Co., Rochester, N. Y.  
Davenport Mfg. Co., Meadville, Pa.  
Gooley & Edlund, Cortland, N. Y.  
Stepstoe Co., John, Cincinnati

## Milling Machines, Portable

Pedrick Tool & Machine Co., Philadelphia  
Underwood Corp., H. B., Philadelphia

## Milling Machines, Universal

American Milling Machine Co., Cincinnati  
Becker Milling Machine Co., Boston, Mass.  
Brown & Sharpe Mfg. Co., Providence, R. I.  
Cochrane-Bly Co., Rochester, N. Y.  
Stepstoe Co., John, Cincinnati

## Milling Machines, Vertical

Beaman & Smith Co., Providence, R. I.  
Becker Milling Machine Co., Boston, Mass.  
Bickett Machine & Mfg. Co., Cincinnati  
Bristol Machine Tool Co., Bristol, Conn.  
Brown & Sharpe Mfg. Co., Providence, R. I.  
Burke Machine Tool Co., Conneaut, Ohio  
Clough, R. M., Meriden, Conn.  
Cochrane-Bly Co., Rochester, N. Y.  
Knight Machinery Co., W. B. St. Louis, Mo.  
Taylor & Fenn Co., Hartford, Conn.

## Mills, Adjustable Hollow

Genesee Mfg. Co., Rochester, N. Y.

## Motors, Electric

Reliance Electric & Eng. Co., Cleveland  
Wisconsin Electric Co., Racine, Wis.

## Oil Cups

Gits Bros. Mfg. Co., 1940 S. Kilbourne Av.,  
Chicago

## Oil Hole Covers

Tucker, W. C. & F. C., Hartford, Conn.

## Oils, Quenching

Bell & Gossett Co., 618 W. 39th St., Chicago

## Pattern Shop Machinery

Chicago Mch. Exchange, 1219 Washington

Cochrane-Bly Co., Rochester, N. Y.

Silver Mfg. Co., Salem, Ohio

Towsley Mfg. Co., John T., Cincinnati

## Pipe Bending Machines

Pedrick Tool & Machine Co., Philadelphia

Underwood Corp., H. B., Philadelphia

## Pipe Cutting and Threading Machines

Rignall & Keeler Mch. Wks., Edwardsville, Ill.

Simmons Machine Co., Albany, N. Y.

## Planer Attachment, Radius

Underwood Corp., H. B., Philadelphia

## Planer Tools, Circular

Underwood Corp., H. B., Philadelphia

## Planers, Valve Seat, Portable

Pedrick Tool & Machine Co., Philadelphia

Underwood Corp., H. B., Philadelphia

## Planing Machines, Metal

Bickett Machine & Mfg. Co., Cincinnati

Cincinnati Planer Co., Cincinnati

Lee Co., Frank H., Danbury, Conn.

## Pneumatic Tools

Independent Pneumatic Tool Co., 600 W

Jackson Blvd., Chicago

## Polishing and Buffing Machines

Mount Co., J. G., Everett, Mass.

Candey-Otto Mfg. Co., Chicago Heights, Ill.

New Britain Machine Co., New Britain, Conn.  
Partridge, E. O., 2047 W. Lake St., Chicago  
Stow Flexible Shaft Co., Philadelphia  
Webster & Perks Tool Co., Springfield, Ohio  
Wilmarth & Morgan Co., Grand Rapids,  
Wisconsin Electric Co., Racine, Wis. (Mich.)

## Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.  
Bartlett, Edwin E., Nashua, N. H.  
Candey-Otto Mfg. Co., Chicago Heights, Ill.  
Laurie Mfg. Co., Springfield, Ill.  
Nicholson & Co., W. H., Wilkes-Barre, Pa.  
Weaver Mfg. Co., Springfield, Ill.

## Presses, Broaching

Atlas Press Co., Kalamazoo, Mich.  
Bartlett, Edwin E., Nashua, N. H.  
Laurie Mfg. Co., Springfield, Ill.

## Presses, Foot

Atlas Press Co., Kalamazoo, Mich.  
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.  
Laurie Mfg. Co., Springfield, Ill.  
Rockford Iron Works, Rockford, Ill.  
Taylor & Fenn Co., Hartford, Conn.  
Partridge, E. O., 2047 W. Lake St., Chicago

## Presses, Power

Loshbough-Jordan T. & M. Co., Elkhart, Ind.  
Rockford Iron Works, Rockford, Ill.  
Willard Press & Tool Co., Cincinnati

## Presses, Punch

Enterprise Machinery Co., 22 S. Clinton St.,  
Chicago  
Henry & Wright Mfg. Co., Hartford, Conn.  
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.  
Loshbough-Jordan T. & M. Co., Elkhart, Ind.  
Laurie Mfg. Co., Springfield, Ill.  
Partridge, E. O., 2047 W. Lake St., Chicago  
Rockford Iron Works, Rockford, Ill.

## Presses, Screw

Atlas Press Co., Kalamazoo, Mich.  
Laurie Mfg. Co., Springfield, Ill.  
Weaver Mfg. Co., John T., Cincinnati  
Weaver Mfg. Co., Springfield, Ill.

## Pulley Machinery

Cincinnati Pulley Mch. Co., Cincinnati

## Pulleys, Iron, Solid and Split

Conway & Co., Cincinnati  
National Clutch Co., 1869 Fulton St., Chicago  
Prott Dry Co., 328 N. Sangamon St., Chicago

## Punch Press Feeds

Rockford Iron Works, Rockford, Ill.

## Punches, Hand

Hendley & Whittemore Co., Beloit, Wis.

## Punches, Power

Clough, R. M., Meriden, Conn.  
Hendley & Whittemore Co., Beloit, Wis.  
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.  
Long & Allstatton Co., Hamilton, Ohio  
Wickes Bros., Saginaw, Mich.

## Punches and Dies

Hendley & Whittemore Co., Beloit, Wis.  
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.  
Lewthwaite Mch. Co., T. H., 415 E. 31st St.,  
New York  
North Side Tool Co., Dayton, Ohio  
Rockford Iron Works, Rockford, Ill.

## Reamers, Solid

Clough, R. M., Meriden, Conn.  
Kelly Reamer Co., Cleveland  
McCrosky Tool Corporation, Meadville, Pa.  
Ready Tool Co., Bridgeport, Conn.

## Reamers, Adjustable

Clough, R. M., Meriden, Conn.  
Greenfield Tap & Die Corp., Greenfield, Mass.  
Kelly Reamer Co., Cleveland  
McCrosky Tool Corporation, Meadville, Pa.  
Sterling Products Co., 549 Washington Blvd.,  
Chicago

## Reamers, Cylinder

Hinckley Machine Works, Hinckley, Ill.  
Kelly Reamer Co., Cleveland  
McCrosky Tool Corporation, Meadville, Pa.

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### Reels, Extension

Cincinnati Specialty Mfg. Co., Cincinnati

### Riveting Machines

Grant Mfg. & Mch. Co., Bridgeport, Conn.  
High Speed Hammer Co., Rochester, N. Y.  
Independent Pneumatic Tool Co., 400 W. Jackson Blvd., Chicago

### Rad Cutters

Hendley & Whittlemore Co., Beloit, Wis.  
Lewthwaite Co., Geo. A., 116 Walker St., N. Y.  
Tucker, W. C. & F. C., Hartford, Conn.

### Roller Bearings

Gwilliam Co., 253 W. 58th St., New York

### Sand Blast Abrasives

United States Silica Co., 1941 Peoples Gas Bldg., Chicago

### Scraping Machines, Pneumatic

Anderson Brothers Mfg. Co., Rockford, Ill.

### Screw Machines, Automatic

Brown & Sharpe Mfg. Co., Providence, R. I.  
Cincinnati Automatic Mch. Co., Cincinnati  
National Acme Company, Cleveland  
New Britain Mch. Co., New Britain, Conn.

### Screw Machines, Plain or Hand

Acme Machine Tool Co., Cincinnati  
Smyer & Kamen Co., 338 N. Albany Av., Chicago  
Wood Turret Machine Co., Brazil, Ind.

### Screws, Cap and Set

National Acme Company, Cleveland

### Second-Hand Machinery Dealers

Allen Mch. Co., B. Co., 104 S. Clinton St., Chicago

Badger-Packard Mch. Co., Milwaukee, Wis.  
Baird Machinery Co., W. J., Detroit, Mich.

Bath & Co., Cyril J., Cleveland, Ohio  
Bennett Machinery Co., G. L., 30 Church St., New York

Biggs-Watterson Co., Cleveland  
Broadway Machinery Co., Cincinnati

Brown-McDonald Mch. Co., St. Louis, Mo.  
Bussell Machinery Co., Providence, R. I.  
Cleveland Belting & Mch. Co., Cleveland

Dale-Brewster Mch. Co., 641 Washington Blvd., Chicago

Easley Machinery Co., E. L., 605 Washington Blvd., Chicago

Factory & Mill Supply Co., 137 Oliver St., Boston, Mass.

Federal Mch. Sales Co., 12 N. Jefferson St., Chicago

Fitzgerald & Co., W. H. J., Boston, Mass.

Girard Machine & Tool Co., Philadelphia

Graves Mch. Exc., 50 Church St., New York

Harris Bros. Co., W. 36th & Iron, Chicago

Hill, Clarke & Co., 525 Wash'n Bldg., Chicago

Johnson & Sons Machinery Co., Wm. C., Kinsey Co., E. A., Cincinnati

Lucas & Son, J. L., Bridgeport, Conn.

Lynd-Fargnoli Co., Boston, Mass.

McCabe Lathe & Machinery Corp., J. J., 149 Broadway, New York

McCoy-Brandt Mch. Co., Pittsburgh, Pa.

McMullen Mch. Co., Grand Rapids, Mich.

Marshall & Huschard Machinery Co., 17 S. Jefferson St., Chicago

Molitor Mch. Co., Chas., 215 S. Clinton St., Chicago

Motch & Merryweather Mch. Co., Cleveland

Niles-Bement-Pond Co., 111 Broadway, N. Y.

O'Brien Machinery Co., Philadelphia

Osborne & Sexton Mch. Co., Columbus, O.

Osgood, J. L., Buffalo, N. Y.

Parker Co., Frank H., 1st National Bank Bldg., Chicago

Peninsular Machinery Co., Detroit, Mich.

Prentiss & Co., Henry, Singer Bldg., N. Y.

Russell Machine Co., Pittsburgh, Pa.

Simmons Machine Co., Albany, N. Y.

Smith Machinery Co., H. A., Syracuse, N. Y.

Stocker-Rumely-Wachs Co., 117 N. Jefferson St., Chicago

Strong, Carlisle & Hammond Co., Cleveland

Thompson Co., C. M., 35 S. Clinton St., Chicago

Thompson Inc., Frank, 127 N. 3rd St., Phila.

Vernegut Machinery Co., Indianapolis, Ind.

Walsh Machinery Co., M. J., Milwaukee, Wis.

Warner, H. D., Hartford, Conn.

Wayne Mch. Co., Fort Wayne, Ind.

White Mch. Co., A. D., 108 N. Jefferson St., Chicago

Winter, Herman L., Philadelphia

Wright, David A., 568 Washington Blvd., Chicago

### Shafts, Flexible

Shaw Flexible Shaft Co., Philadelphia

### Shaping Machines

Cochrane-Bly Co., Rochester, N. Y.

Columbia Machine Tool Co., Hamilton, Ohio

Devis Machine Tool Co., Rochester, N. Y.

Milwaukee Shaper Co., Milwaukee, Wis.

Osborne & Sexton Mch. Co., Columbus, O.

Rhodes Mfg. Co., Hartford, Conn.

Sellew Machine Tool Co., Pawtucket, R. I.

Simmons Machine Co., Albany, N. Y.

Smith & Mills Co., Cincinnati

Staptee Co., John, Cincinnati

### Shears, Hand

Armstrong-Blum Mfg. Co., 341 N. Francisco

Hendley & Whittlemore Co., Beloit, Wis.

Lewthwaite Co., Geo. A., 116 Walker St., N. Y.

Tucker, W. C. & F. C., Hartford, Conn.

### Shears, Power

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Long & Ailstatte Co., Hamilton, Ohio

### Sine Bars

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### Slotting Machines

Crough, R. M., Meriden, Conn.

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### Stock Supports

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### Swaging Machines

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### Tables, Circular

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Walton Co., Hartford, Conn.

### Tap Wrenches

Alert Tool Co., Philadelphia

### Tapping Machines and Attachments

Beaman & Smith Co., Providence, R. I.

Burke Machine Tool Co., Conneaut, Ohio

Cincinnati Pulley Machinery Co., Cincinnati

Fenn Mfg. Co., Hartford, Conn.

Greenfield Tap & Die Corp., Greenfield, Mass.

Hammond Mfg. Co., Cleveland

McCroskey Tool Corporation, Meadville, Pa.

Modern Tool Co., Erie, Pa.

Richert-Shafer Co., Erie, Pa.

Turner Machine Co., Danbury, Conn.

Webster & Perks Tool Co., Springfield, Ohio

Whitney Mfg. Co., Hartford, Conn.

Worthington Eng. & Mfg. Co., 616 W. Monroe St., Chicago

### Taps, Collapsing

Murphy Machine & Tool Co., Detroit, Mich.

### Taps and Dies

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National Acme Company, Cleveland

### Thread Cutting Tool Jigs

G-L Sales Co., 521 W. 25th St., New York

### Thread Milling Machines

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### Threading Tools

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Greenfield Tap & Die Corp., Greenfield, Mass.

Modern Tool Co., Erie, Pa.

Murphy Machine & Tool Co., Detroit, Mich.

National Acme Company, Cleveland

Ready Tool Co., Bridgeport, Conn.

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Newman Mfg. Co., Cincinnati

### Valve Seat Planing Machines, Portable

Stow Flexible Shaft Co., Philadelphia  
Underwood Corp., H. B., Philadelphia

### Vises, Drilling Machine

Ainslie Mch. & Tool Works, Hartford, Conn.  
Armstrong-Blum Mfg. Co., 341 N. Francisco  
Av., Chicago

Armstrong Bros. Tool Co., 308 N. Francisco

Carter & Hakes Mch. Co., W. Winsted, Conn.  
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Thomas Elevator Co., 31 So. Hoyne Ave.,  
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### Vises, Machinists'

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Nestor Mfg. Co., 40 W. 13th St., New York  
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Spafford Tool Works, Hartford, Conn.  
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Steptoe Co., John, Cincinnati

### Washing Machines for Metal Parts

Niven Mfg. Co., 848 Larrabee St., Chicago

### Wood Working Machinery

Chicago Mch. Exchange, 1211-27 Washington  
Bld., Chicago  
Hendley & Whittmore Co., Beloit, Wis.  
Cincinnati Vise Co., Cincinnati  
Silver Mfg. Co., Salem, Ohio  
Towsley Mfg. Co., John T., Cincinnati  
Whitney & Son, Baxter D., Winchendon, Mass.

## New Boston Show Rooms

# W. H. J. Fitzgerald & Co.

30 Oliver St., Boston

- 1 Foote-Burt Company No. 23 Heavy Duty Drill, 20" swing, single belt drive, capacity  $\frac{3}{8}$ " to  $1\frac{1}{4}$ ", guaranteed good as new.
- 2 No. 2 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, hand longitudinal feed to cut-off, with power feed to hexagon turret.
- 2 No. 1 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, lever feed to cut-off only, automatic chuck capacity  $\frac{5}{8}$ ".

These machines are in A-1 condition.

## Six $\frac{1}{4}$ Inch Automatic Screw Machines (Stehli Patent)

Each fitted with screw slotting attachment. Manufactured by Hartford Machine Screw Company. These machines adapted to the rapid production of all kinds of small screws, bushings, studs, etc. Condition, good as new.

# Pattern Shop Machinery

Special Prices if you refer to this ad.



## Band Saws

Chicago No. 00 27 in. Wheels

" No. 0 32 " "

" No. 1 36 " "



## Saw Tables

Chicago No. 5 Stationary Table

" No. 9 Tilting Table

" No. 10 " "

Boring attachment if wanted.



## Jointers

8 in., 5 and 6 ft. tables and guard.

12, 16, 20, 24 and 30 in., 7 ft. tables and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

## Chicago Machinery Exchange

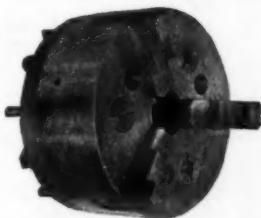
1211-1227 Washington Boulevard, Chicago

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# The Lavoie Air Chuck

The Simplest and Best



Made in many sizes

Made in seven types

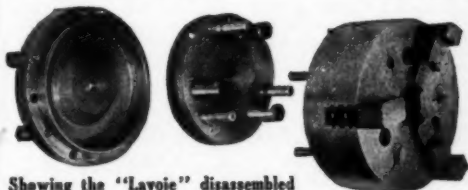
Six types of universal  
or combination jaws

Don't confuse the "Lavoie" with other air chucks. It is simpler and better and inexpensive to install. Already used in a number of the best plants of the country, in some of which they "didn't want air chucks" until they saw the "Lavoie."

We avoid the heavy cylinder on rear end of spindle and combine the chuck, cylinder and piston in a single unit, simplifying its construction and application to the work. The clamping mechanism is of the lever and wedge type—absolutely no gears. A releasing spring eliminates the necessity for double piping and economizes air.

*You will be interested in the full description. Your address?*

**Frontier Chuck & Tool Co.**  
36 Letchworth St., Buffalo, N. Y.



Showing the "Lavoie" disassembled

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Designed  
for  
Greatest  
Utility

**"New Britain"**  
**Nesting Tote**  
**Boxes**

Built  
for  
Longest  
Service



Made of one piece, with the exception of the handles, in which heavy double-fold stock is used. They are especially reinforced at the points of greatest strain, and all laps and folds are electrically welded, combining lightness with unusual stability. They are close nesting and occupy little space in transportation and storage. Furnished liquid-tight if desired. They combine utility and service in the highest degree.

*Free Bulletin 1224-B describes fully*

**The New Britain Machine Company**

**"Shop Furniture  
Originators"**



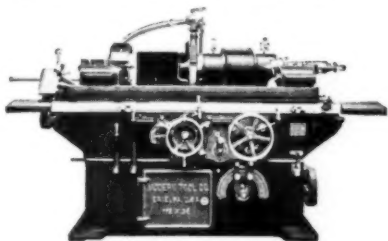
**New Britain,  
Conn. U.S.A.**

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## Specially designed for **Rigidity**

which is one element contributing to their noteworthy accuracy and long life. Rigidity, also, has its effect in Modern ability to maintain higher speeds without injury to machine or work.

## **Convenience**

is another Modern feature, highly appreciated by both shop executives and operators, assisting materially in volume of output without fatigue. Made in 10 sizes, 8x18" to 16x60". All full self-contained, single pulley or motor drive. *Send for technical bulletin.*

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Main Office and Works **ERIE, PA.** Second and Peach Sts.

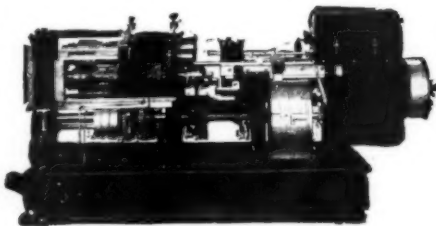
### **BRANCH OFFICES:**

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DETROIT, MICH., 40 Larned St., E.	Office Exchange
CLEVELAND, O., Guardian Bldg.	EXPORT DEPARTMENT, 2 Rector
CHICAGO, ILL., 32 N. Clinton St.	Street, New York

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California Representatives: Herberts Machinery & Supply Company,  
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Castings, forgings, and second-operation bar work machined the "New Britain" automatic multiple way

All  
Operations  
Simultaneous  
and  
Automatic



"New Britain" Automatic Multiple Spindle  
Chucking Machine, of the Work-Rotating Type

Has six work-holding spindles.

Operates on five pieces at once.

Seven tool-operating positions—five end and  
two side—and all may operate simultaneously.

Completes a considerable variety of operations  
or the subdivision of a lesser number in the time  
of the longest single operation or its subdivision.

Chucks are operated by air pressure. Has  
wide range of feeds, threading and spindle speeds.  
Belt or motor drive.

*Bulletin 956 explains; better have it*

**The New Britain Machine Company**

Automatic  
Screw and Chucking  
Machines



New Britain,  
Connecticut,  
U.S.A.

